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TROMSØ UNIVERSITY BUSINESS SCHOOL

Connecting a Science-Based Research Idea with a Viable Commercialization Strategy

The Praqo Logging System

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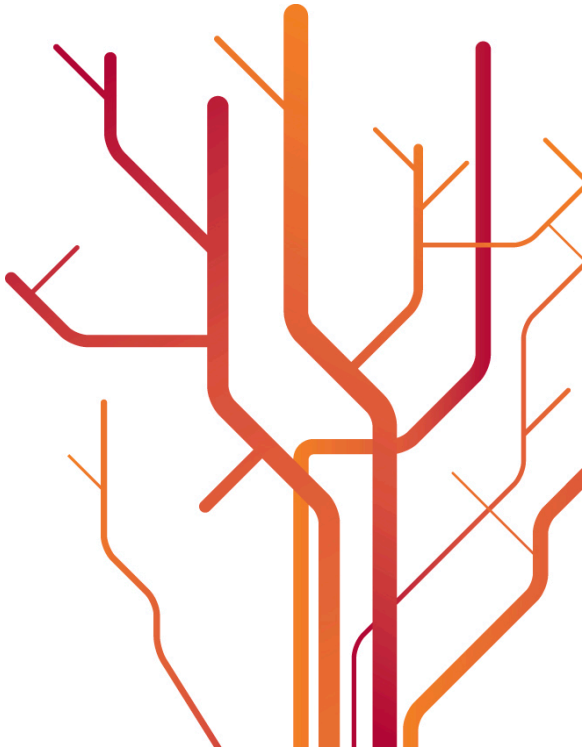
Master's Thesis in Business Creation and Entrepreneurship (30 credits)

May 2013



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Acknowledgments

We would like to thank Professor Lene Foss for all her mentorship and advice throughout the length of our study, and for encouraging us to continuously push ourselves to develop the quality of work that she knew we were capable of. We would also like to thank our other two supervisors, Elin Merethe Oftendal and Sven Arne Pedersen for their invaluable assistance on our research and writing development.

A very special thanks goes to Jannik and Benjamin Kehlet for coming up with the idea and the software behind the Praqo Logging System that served as the basis for this thesis, and for their thorough explanation of the complex technology in a clear and understandable way.

Furthermore, we would like to thank Kjell Åge Rognli who assisted us with the work on this project from the perspective of Norinnova Technology Transfer.

We would like to express our thanks to Dagfinn Sætra from Nord Connect and Asbjørn Lilletun from Norinnova Technology Transfer for their valuable feedback and advice on the presentation content and technique for the Pre-Springboard.

Finally, we would like to thank Ingvild Jon, Håvar Brattli and Jan-Are Paulsen for helping us to refine an area that we both find especially challenging: the finance of the venture.

Individual acknowledgments

Joanna would like to thank Bettina and Urs Reinli-Urwyler for the emotional support throughout the whole period of writing the thesis. Special thanks goes to Kinga Łęszczak, Olga Gozhina, Ksenia Nazaryeva, Rahman Mankettikkara, Maciel Zortea, Grażyna Teresa Lubera, Tina Derakhshan and Zeenat Suleman for their friendship, inspiring discussions and encouragement in all areas of life.

Jessica would like to thank her fiancé Michael P. Johnsen for being a chef, therapist, caretaker, butler, coach, soundboard, mentor, audience member, and cheerleader throughout the entire process of research, writing, and creation. Completing this thesis would have been impossible without his patience and encouragement.

Abstract

The topic of this thesis is a focus on commercializing a science-based research idea provided to us from the Business Creation and Entrepreneurship program at the University of Tromsø. We have chosen to research a science-based technological idea developed by a startup company called Praqo AS, and delivered to us through Norinnova Technology Transfer.

Praqo and its technology operate within the film and television industry, which has revenues of $87 billion worldwide. This industry has been amazingly adaptive to change in technology and preferences over the years, and it is now universally recognized that it may be experiencing its most transformative innovation since its inception: the move from analog processes in filmmaking to an entirely digitalized existence. The move to digitalization has encouraged innovation at creative and technical levels alike. One such innovation is the Praqo Logging System, a cloud-based software system for the automatic assembly and management of 'digital dailies.' It has been developed by Praqo AS in order to make certain parts of the post-production process in film editing easier and faster. This company and its product serve as the case study and focus of our thesis.

This document serves as a tool to move the Praqo Logging System from a technology-driven process to a market-driven process, while developing a commercialization strategy. It consists of three main chapters: a technological study proving the viability of the technology, a market study proving the appropriateness of the market of entry, and finally a business plan as a specific blueprint for introducing said technology to the market. Calculations for the financial portion of the business plan were aided by 'Business Plan Pro' software.

This thesis is driven by our central research question: *How are the innovative potential and market opportunities associated with the commercial viability of the Praqo Logging System?* This question will be explored throughout the next four chapters.

Key words: academic entrepreneurship, commercialization, research-based innovation, film post-production.

1. Introduction

The topic of this thesis is a focus on commercializing a science-based research idea provided to us from the Business Creation and Entrepreneurship program at the University of Tromsø. This chapter is meant to set up the understanding for why such an idea was chosen as a research topic and to present the research questions and sub questions that will be explored throughout the thesis. It begins with an overview of the difficulty of innovation within Norway, and what the academic sector is trying to do to alleviate this problem. That is followed by a discussion of the effects of innovation on the film and television industry, including digitalization, globalization, and clustering. After that we will introduce the science-based research idea, and the research question and sub-questions that have been developed in order to explore it. Then there will be an explanation of theoretical frameworks, research design, and methodology for the thesis. The chapter will then be wrapped up with thesis limitations and final reflections.

1.1. Academic Entrepreneurship Fuels Innovation in Norway

Despite Norway's world-renown social support structure and high quality of life (Butcher, 2012), the country scores very low when it comes to innovative output. In fact, the overall viewpoint on Norwegian firms is that they are not very innovative. This trend is especially prevalent in small to medium size enterprises (SMEs) compared to other European SMEs. It also extends into patent applications; even within its own country, patents of Norwegian origin only account for 20% of those filed in Norway between 1991 and 2002 (Gronning, 2008).

Ironically, despite its low innovative output, Norway ranks quite high when it comes to an active population engaging in start-up companies. But these start-ups do not necessarily succeed. Furthermore, only 11.2% of spinoff firms in Norway during this time period were spin-off firms from high-technology industries (Gronning, 2008).

There are many theories behind the reasoning for Norway's low innovation output, but they are beyond the scope of this research. What is interesting to note, however, are the steps that those in academia are taking in order to encourage innovation within Norway and reverse this trend, and not only in helping to launch start-ups, but in helping them to succeed. Universities have taken on a 'third mission' in addition to teaching and research, known as 'academic entrepreneurship.' It is meant to help foster innovation and encourage positive

social change (Foss, 2012) by utilizing university resources through a university setting. While this is not a phenomenon unique to Norway, this country has much to gain from such a system. One example of such a program is the Business Creation and Entrepreneurship (BCE) Master of Science program at the University of Tromsø (UiT) in Northern Norway.

The BCE program is only one of 17 Venture Creation Programs (VCP List, 2012) in the world, modeled on the program at the Chalmers University of Technology in Gothenburg, Sweden. It has been formed in order to educate students in the creation of real-life ventures in an action-based environment, where theory and practical application are married in order to promote the real development and success of start-up companies fueled by science-based research ideas. These programs can be considered an important link between the knowledge-production of academia and the value-creation process of society. The two-year BCE program of Tromsø was founded in 2008, and as one of the pioneers of this type of program (Lackéus, 2012), it is significantly refined with each graduating class. Thus far it is spawned two real technology-based businesses located in Northern Norway led by BCE graduates: D'Liver AS and Globesar AS

The University Business School (TUBS) at UiT has partnered with Norinnova Technology Transfer (NTT) in order to bring science-based research ideas to the students of the BCE program each year. NTT is partially owned by the Northern Research Institution (NORUT) of Norway, a national research group with a specific focus on innovation in Northern Norway, and also serves as a business incubator for startups. These science-based research ideas are then chosen by the students as master thesis topics that are developed throughout the second year of the program, with a focus on turning a science-based technology into a commercially desirable product. These theses consist of three main chapters: a technological study proving the viability of the technology, a market study proving the appropriateness of the market of entry, and finally a business plan as a specific blueprint for introducing said technology to the market.

We, as students of this very same BCE program, have chosen to develop a science-based technological idea developed by a startup company called Praqo AS, and delivered to us through NTT. Praqo operates within the film and television industry, which is often overlooked by academic entrepreneurs.

The only role that universities play in helping to build the film industry is by providing formalized knowledge (Martin and Moodysson, 2011) and skilled labor, and even this is

limited, as formal education is not as highly valued as it is in some industries. There are few links found between the film and television industry and public institutions, including universities. In fact, according to an in-depth study by Chapain et al that includes film companies (2011), universities 'are rarely mentioned by respondents as a source of innovation, or even as a local factor that supports innovation in their areas.'

The opportunity for academic entrepreneurs and film professionals to collaborate on developing and commercializing innovative technology is one that should be recognized. The film and television industry provides many options for innovation, not only spurring economic growth for its own sector but for many sectors across the board. There are several examples of how innovation has helped to develop the film and television industry thus far, and our discussion begins with the digitalization of the filmmaking processes.

1.2. Digitalization Transforms the Film and Television industry

The film industry is an $87 billion dollar industry worldwide (IbisWorld Global Movie Production & Distribution, 2012) that has been amazingly adaptive to changes in technology and preferences over the years. The motion picture survived through the innovations of scientists and engineers such as Eadweard Muybridge (Manley, 2011), Etienne Marey, the Lumière brothers, and Thomas Edison (Squier, 2010) to become the phenomenon that we know of today. But it is now universally recognized that the film and television industry may be experiencing its most transformative innovation since its inception. In fact, some say that we are 'both witnesses to and participants in the largest, most fundamental transformation in the history of the media since the advent of typeface, the moving image, and terrestrial broadcast transmission' (Levin, 2009). That is the move from analog processes in filmmaking to an entirely digitalized existence.

Analog filmmaking, which has been the primary method of filmmaking for the past few decades, was a process that only the wealthy and educated had access to. Not only was it expensive and time consuming, but required extensive training in a variety of highly technical processes. This wasn't a problem for the large filmmaking industries of the world, typically centered in the U.S. and Europe, but independent film and television companies struggled with expenses. Technically speaking, it was nearly impossible for the average person to make even the most basic version of a film. The voices that were primarily being heard were also Westernized and from developed countries almost exclusively (Pager, 2012).

In the digital world, film is now captured entirely using computers-based systems, allowing for much quicker modification with non-linear editing software (Post Production, 2012). There are still a few big studio movie makers that continue to use 35mm film, but even those must first be transferred to digital media before the post-production process. Furthermore, the lack of affordability of such film in coming years is expected to put analog out of business for good.

The move to digitalization has encouraged innovation at creative and technical levels alike. Relayed in a very straightforward manner from Martin Hall (2010), innovation is 'the process of turning ideas into useful outcomes. Innovation is a pathway, not an event. It includes big science - space travel, the human genome, digital technologies - and also small things such as paperclips and ballpoint pens. Far more often than not, sustainable innovation comes from the cumulative effects of implementing small-scale, useful ideas over quite long periods of time.' Digitalization has put the ability to create new things and ideas in the hands of millions of people, some of those who were previously cut-off from this particular route of innovation.

For the purposes of this thesis, we will examine two main subsectors of the film and television industry that are affected by digitalization: production (or principle filming) and post-production. Players in both of these categories have taken advantage of digitalization in its own unique way.

The first subsector, principle filming, refers to the actual translation of a written script into raw video footage eventually meant for the screen. Digitalization has allowed production equipment, including variety of cameras and audio-capturing devices, to become much more technically advanced, user-friendly, and affordable. This kind of equipment comes in all levels of quality, and a simple digital video recorder such as the ‘Flip’ costs less than 600 Norwegian Kroner (NOK) (Ryan and Hearn, 2010). This means that independent companies can shoot feature-length films of high quality on an extremely tight budget (60,000-90,000 NOK), and the average person can shoot and edit their own experiences right at home (Pager, 2012).

An example of how digitalized processes have changed the world for the better is the case of Nigeria's budding film industry, more commonly known as ‘Nollywood.’ In the 1990s and prior, Nigeria had no established local film industry, and most films that were made of Africa were by Western filmmakers, and therefore colored by their interpretations. But in a

little under a decade, not only has Nigeria emerged as a major player in the filmmaking world with original productions from a Nigerian perspective, but the number of films produced per year rivals Bollywood and far exceeds Hollywood. This is largely due to the accessibility that digitized processes have given to those with traditionally fewer filmmaking resources. It has given them a brand-new source with which to innovate and project their cultural identities to the world (Pager, 2012).

The second subsector for discussion is film and television post-production. This refers to the transition of raw film footage from principle filming into the polished version that is ready for the screen. It is an essential part of filmmaking, and includes visual effects as well as sound mixing and editing (Klowden et al, 2010). The umbrella of post-production encompasses many processes, including editing, titling, closed captioning, computer-produced graphics, animation, and special effects. This segment accounted for revenues of approximately $4.8 billion in 2009 (SelectUSA, 2011). It would be impossible to view films at the level of quality that audiences have become accustomed to without post-production.

The digital era has led to tremendous strides in the ability to innovate using post-production. Analog editing was done frame-by-frame on bulky reels, which were then required to be edited in linear order. This included cutting strips of film in particular spots and then splicing it back together by hand (Post Production, 2012). But now, the digital method requires only manipulation through a common computer-based system which can be easily installed on computers in most Westernized homes (Pager, 2012). So not only can more people shoot their own films, but they can also edit them in a variety of ways right in their living room.

The advent of digitalization also means that rather than shipping boxes of film to crew members in a variety of locations, digital video files can be sent around the world with just the click of a mouse. The importance of this is explored further in the next section.

1.3. Globalization Allows Freedom in Communication

When it comes to the major Westernized movie studios, post-production has traditionally been centered primarily in California. Pioneers such as Frances Ford Coppola and George Lucas moved their post-production studios to the San Francisco Bay Area in the 1970s, others followed suit, and there they have remained. Some continue to operate there, heavy hitters such as Industrial Light & Magic, Digital Domain, Rhythm & Hues,

Dreamworks Animation SKG, and Pixar Animation Studios. These are in addition to major studio in-house firms such as Sony Imageworks, the Walt Disney Studios, Universal Studios, and Warner Bros.

But the digitalization of the post-production industry has allowed it to rapidly go global. While in the 1990s, California boasted an all-time high of 15 252 jobs in this sector, they soon faced a sharp decline. In 2008, only 9 600 post-production jobs remained in the state, while the need for post-production was only increasing (Klowden et al, 2010). Another factor leading to the decline may be the financial precariousness of film careers: most are on a freelance, project-by-project basis. The media labor force is considered to be fluid and insecure, where salaried work is rare (Davis et al, 2009).

Several countries are on the list of up-and-coming post-production hotspots, such as New Zealand, India, and England. New Zealand is home to Weta Digital, the company that performed most of the post-production for the *Lord of the Rings* trilogy. The success of the trilogy proved that this sort of work could be done overseas, and the results could be delivered back to the California-based studios overnight. Software firms in India have begun to offer financial incentives for companies willing to put their trust in Indian post-production work, which offers lower costs, a skilled staff educated in the English language, and experience in the industry. Finally, London has a big advantage with its popular entertainment industry and well-known music studios such as Abbey Road (Klowden et al, 2010).

Globalization is furthering innovation in the film and television industry, as producers worldwide are now 'exchanging scripts, advice, filmmaking techniques, and works-in-progress via the Internet, which in turn is leading to the emergence of novel, trans-cultured films' (Currah, 2003). But while the trend is definitely moving toward a globalized film and television world, there are some aspects of these industries that require face-to-face interaction. This is examined in the next section.

1.4. Clustering Increases Collaboration among Media Companies

There is an emphasis placed upon face-to-face interactions within the film and television industry. Despite the fact that people can now communicate with ease across greater distances than ever before, there are certain forms of knowledge that cannot be transferred utilizing words and symbols. This sort of knowledge is called tacit knowledge, and can only be demonstrated in-person. There is also a level of trust that is easier to build

between people who physically interact on a regular basis, personally and professionally. Furthermore, people who interact regularly pick up a local 'buzz' without intention (Martin &Moodysson, 2011). This can include rumors, impressions, recommendations, trade folklore, and strategic information (Asheim et al, 2007).

The importance of these interactions leads companies in similar industries to concentrate geographically in certain areas, forming creative clusters. These companies can then collaborate and compete on a regular basis, thereby combining more minds when solving increasingly difficult problems. In fact, the Minister of State for Universities and Science of the UK, David Willetts MP, stated in his first official speech that he believed in creative clusters as a primary source of innovation, and planned to create policy that supported this belief (Chapain et al, 2010). Media clusters are a part of this category.

The well-known media clusters of the world reside mostly in North America and Europe. The principle alpha cities are Los Angeles, New York, London, Paris, Amsterdam, Munich, and Berlin. The main groups of articulator cities in this network are Los Angeles-New York, Munich-Berlin, London, Paris, Stockholm-Oslo-Copenhagen, and Rome. Clusters within these media cities typically consist of production and post-production firms, major broadcasters and media distributors, as well as a variety of support institutions. They are each supported by a labor pool in the minimum of tens of thousands (Davis et al, 2009).

The concepts of globalization and media clustering may seem contradictory, but local ties need to be balanced by complimentary international ties. If a corporation focuses solely on local ties, business and creative trends in the wider world can pass them by. Strong local ties can not only support the development of international ties, but can give credibility to the cluster in question. A highly visible cluster will attract the attention of firms looking outside of their own countries for business connections and innovative ideas (Chapain et al, 2010). Therefore, media firms must work to involve themselves in media clusters while also exploring opportunities for globalization.

Now that we have explored several major signposts of innovation within the film and television industry, we can explore the start-up company Praqo and its innovative product which drives this thesis.

1.5. An Introduction to Praqo AS and the Praqo Logging System

The Praqo Logging System is a cloud-based software system for the automatic assembly and management of 'digital dailies,' and is the case study and focus of our thesis. It has been developed by Praqo AS in order to make certain parts of the post-production process in film editing easier and faster. Traditionally, this process would take a full work day to complete, while with Praqo it takes only a matter of minutes a day. This startup company was founded by a team of three people, including: Jannik Kehlet (film industry professional), Benjamin Kehlet (currently finishing a PhD in informatics at the University of Oslo), and Anders Bakken (a senior developer at Netflix in the U.S.).

A producer is responsible to his investors for the film or television show that he is producing, both in terms of final quality and costs incurred throughout the project. Although he cannot be on-set every day to observe filming, he instead views raw film footage on a daily basis in order to assure that filming is going according to plan. This raw footage is called 'digital dailies.' When mistakes are made, it is up to the producer to request that the scene in question be filmed again. If the producer receives the digital dailies quickly after filming, it is an easy task to re-shoot the scene. However, the assembly of digital dailies is a tedious and grueling process that takes, at minimum, a full work day to perform. Sometimes the producer may not view these files until two, or even three days later. By then, the sets may have been torn down and the actors have left for new shooting locations. The producer must then decide whether he should go over-budget flying the actors back in and re-shooting the scene or just hope the viewing audience doesn't notice the mistakes. Either way, this is bad news for the film, and the investors will not be glad. It may even damage his reputation as a producer, and convince investors not to do business with him in the future.

The Praqo Logging System alleviates this problem by allowing the assembly of digital dailies to be completed automatically within minutes a day, rather than taking many hours for a person to perform manually. This is done utilizing cloud-computing and online delivery, taking all of the work and hassle out of the hands of employees. This ensures that producers and other key staff are receiving the digital dailies as quickly as possible in order to make important decisions that may affect the quality and costs of the film. It also allows for employees who used to manually assemble dailies to be given new responsibilities, reduced to part-time, or eliminated entirely. Finally, it introduces some much-needed standardization to the post-production process, allowing for easier integration of freelance employees.

In order to make the best use of this technology and also the best use of the research associated with this thesis, we must develop one or more questions which must be addressed in order to fully realize the commercial potential of this product. Four research questions have been designed in the next section, and our thesis will revolve around them.

1.6. Research Questions Developed to Guide the Reader

This thesis serves as a tool to move the Praqo Logging System from a technology-driven process to a market-driven process, and develop a viable commercialization strategy. Identifying an adequate research question is crucial to the process and serves as a guideline for the content to the authors and to the readers.

A properly defined research question serves two purposes: A) it specifies where and what kind of research the thesis-writer will be looking for and B) it states the precise objectives the thesis will address. Research questions are captured in two forms: a central question and related sub-questions. The central question asks for an exploration of a certain concept while the sub-questions narrow the focus of the study (Creswell, 2009). It is recommended to begin the central research question with “what” or “how” to convey an open and emerging design

The central research question for our thesis has been formulated as follows and has established the central direction for all three parts of our thesis: technology, market, and business plan:

> *How are the innovative potential and market opportunities associated with the commercial viability of the Praqo Logging System?*

Additionally, three sub-questions have been posed that refer to the technical study, the market study, and the business plan individually. First, we have developed a technical study sub-question:

> *What is the innovative potential of the Praqo Logging System that can be assessed from the technical analysis of its functions, customer utilities and structural control?*

> Second is the market study research sub-question:

> *What is the potential of Praqo's market opportunities and which market is best for the Praqo Logging System?*

And finally, we have the business plan research sub-question:

Which business strategy will the entrepreneurial team undertake for commercialization of a business opportunity of the Praqo Logging System?

The above stated research questions will serve as major signposts for us and for readers of our thesis. We will now elaborate on particular theoretical frameworks that have helped us to address these research questions.

1.7. Theoretical Frameworks Followed

There will be three main components of this thesis in relation to the Praqo Logging System: a Technical Study that will offer an analysis of the viability of the technology, a Market Study that will aim at presenting the market potential of the product through thorough analysis and finally, a Business Plan that will outline the business opportunity and the business strategy of the entrepreneurial team in commercialization.

1.7.1 Technical Study

The technical feasibility study provides a comprehensive overview of the technology behind the Praqo Logging System. By uncovering technical complexities, it aims at arriving at functionalities of the product that will consequently result in the construction of value propositions for the potential users (Petrusson, 2004). This is performed by utilizing a modified version of the Petrusson model (2004), which suggests an analysis of structural control, technical functionalities, and user utilities. Structural control refers primarily to intellectual property rights and the legal security of the technology, technical functionalities are derived from the technical operations of the system, while user utilities refer to the direct benefit the user enjoys from use of the technology. When desirable user utilities are identified, a business strategy can be built upon this basis.

Furthermore, it is important to include a competitor analysis performed on a technological basis. This will compare the operating technology behind the Praqo Logging System with those who claim to solve the same problem to ensure that there is no duplication, and to prove the superiority of the Logging System.

The technical study will also include a discussion of the innovation as such. There are three main categories that companies can focus on developing in order to foster innovation: product, process, or service. The technical study will discuss the various forms of innovations

available and examine sustaining versus disruptive innovations, and radical versus incremental innovations. The discussion will also determine where the Praqo Logging System fits in among these innovation types with relevant arguments supporting our judgment. In addition, we will also discuss the effects of the technical study on the market study as each of the different innovation types requires a specific approach, unique to the others, that will affect all aspects of the market study.

1.7.2 Market Study

One of the most important tasks of an entrepreneur is to be able to identify and evaluate business opportunities (Byres et al., 2008). Opportunities should address actual market needs in order to succeed. To identify these needs, an entrepreneur must understand the market she intends to enter and have a deep knowledge of the forces that influence it. That is why it is crucial to perform market research prior to starting a new venture, as we have done in the market study portion of our thesis.

Market research is a significant part of a business strategy and is defined often as "techniques for gathering information from and about customers to support a business decision" (McQuarrie, 2005). The goal of an entrepreneur is to gain sales and revenue for the business opportunity through strategic decisions that are based on market information. Market research is a tool to assist her with reaching this goal. A business opportunity has distinctive qualities and it is defined as attractive, sustainable, and expressed in a product or a service which increases the buyers or users experienced value (Ludvigsen, 2012).

Academic and business literature advises that the entrepreneur begins her market research with a market analysis, which will present an overview of the industry that she intends to embark upon with the new venture (Byres et al., 2008). An analysis of the film and television industries in our chosen markets will be found initially in the market study. Furthermore, well-thought entry decision should involve a deep understanding of existing and potential competitors together with the market capacity (Moore et al., 2007). An entrepreneur should have a good overview of the competition so that she can assess if the industry is attractive enough to enter. She should also be able to assess the new venture's competitive position within the industry (Moore et al., 2007; 451). Therefore, a thorough competitor analysis is an indispensable element of a good market study. We have researched a variety of potential competitors and their place in the market in order to meet these criteria.

A market study should also outline the market strategy where the market segmentation is specified, and argued for, which we have done for the Praqo Logging System. In addition to that, an entrepreneur is commonly advised to evaluate the strengths, weaknesses, opportunities, and threats of her business idea. Based on this advice, we have included a SWOT analysis in the market study as well. Throughout the chapter we will aim at understanding the marketplace most promising for the Praqo technology, along with the best method for entering those markets.

1.7.3 Business Plan

Unsurprisingly, not all start-ups choose to write a business plan, and some of these businesses still go on to find great success. However, it is argued that creating a business plan furnishes an entrepreneur-to-be with numerous benefits (Timmons and Spinelli, 2009). These can include the possibility to evaluate the business thoroughly and clearly see the 'pain' in the market, the opportunity, and the actual value proposition. In addition, it is important to identify the buyers, end-users, the market, and the competition. It allows us to evaluate the economics and finances behind the business which results in formulating an adequate strategy.

Literature in the field also proves that writing a business plan obliges entrepreneurs to think systematically through all aspects of their start-up (Barringer and Ireland, 2010). It is claimed that business plan operates primarily as a selling document for the company, and allows a start-up entrepreneur to present his business idea to potential stakeholders in an organized fashion. It serves as a blueprint for the business and allows the management team to see their plan of action spread visually over a period of months and years.

Without any doubt, a business plan is an important contribution to the business building process (Byres et al., 2008). It serves as an alignment tool for a new business venture, represented visually in the model below in Figure 1. As an alignment tool, a business plan clearly specifies how the people, the resources, and the opportunity are combined so that all stakeholders benefit from the venture.

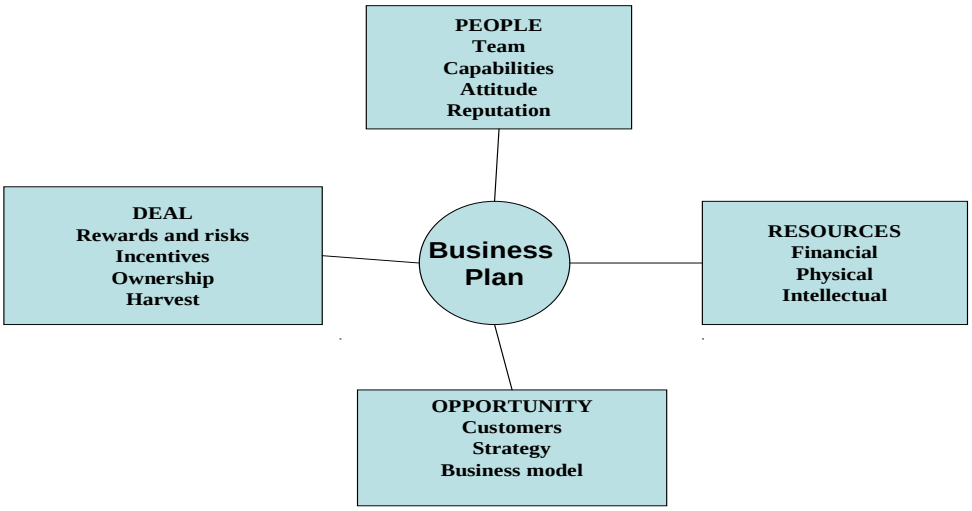


Figure 1: Business Plan as an alignment tool (Byers et al, 2008)

The business plan developed for the Praqo Logging System will aim at addressing all of the aforementioned structural components, so that it can serve as a selling tool for potential investors and other stakeholders.

1.8. Research Design and Methodologies Chosen

Before we can begin research, we must determine what our research design will be for this thesis. According to De Vaus (2001), 'The function of a research design is to ensure that the evidence obtained enables us to answer the initial question as unambiguously as possible.' In other words, research design helps us to determine the evidence we need to collect by identifying specifically what we are trying to achieve by writing the thesis (De Vaus, 2001).

In order to determine the type of research design that will be used in the thesis, we must first examine the research questions themselves, as these will serve as a guide to the type of research most appropriate to an accurate assessment of the current topic. All four of our research questions begin with the words 'which,' 'what,' or 'how,' which suggests that we, as researchers, are trying to obtain a better understanding of the research topic. But we are trying to understand *what* is happening, without a focus on *why*. Furthermore, through our questions we are examining the context of the situation surrounding the topic without changing the

environment, and therefore it is not truly experimental (Knupfer & McLellen, 2001). This leads us to the conclusion that we are conducting descriptive research.

Within the umbrella of descriptive research design lie several sub-categories, including the category of case study. A case study is an in-depth study of a particular situation, existing in its own context, without interference from the researcher. The researcher gathers information from the case study observation and analyzes it based on the theoretical issues being explored (Hartley, 2004). For the purposes of this thesis, we will consider Praqo and the potential commercialization of the Praqo Logging System as our case study.

Both quantitative and qualitative methods of research can be used in a case study, but we have chosen to rely primarily upon qualitative methods. By utilizing qualitative methods, researchers are able to immerse themselves in a subject, which in turn prompts new ideas or questions for additional research. Unlike quantitative data, qualitative data is usually gathered in order to give researchers an educated background on a subject *before* theorizing about it (Tucker et al, 1995). Various forms of qualitative research methods include interviews, narratives, written and electronic material, participant observation, focus groups, and design thinking. Our primary forms of research are interviews and secondary data collection of written and electronic material.

An interview, as defined by Kvale (1996), is an 'interchange of views between two or more people on a topic of mutual interest, sees the centrality of human interaction for knowledge production, and emphasizes the social situatedness of research data.' They are a way to gather perceptions and interpretations of valuable parties through conversations. To get the most out of an interview, it is crucial to design questions that encourage a respondent to give full replies while avoiding the tendency to lead the respondent in a certain direction (Kajornboon, 2005). It is important that when the interviewee is contacted, the respondent understands 1) why *they*, in particular, have been chosen for the interview, 2) the basic pursuit of the research being conducted, 3) the expected length of the interview, and the reasons for recording it, and 4) where and when the interview will take place (Gillham, 2000).

There are four main types of qualitative interviews, including structured interviews, semi-structured interviews, unstructured interviews, and non-directive interviews. We used a combination of semi-structured and unstructured interviews for this thesis. They were the most appropriate, as we were relying upon a descriptive analysis from our interviewees that we expected to potentially take unexpected directions. These questioning tactics allowed some

freedom in not only the question-asking, but in the question-answering as well. A table displaying a summary of all of the interviews performed can be found in Appendix C.

Our secondary data sources consisted of non-public documents provided by the idea provider, reports, academic articles from journals, reliable online sources, and other official publications which were used throughout our research. When it comes to secondary data collection, it is important that researchers realize the importance of accessing this material before, during, and after primary research. According to Zucker (2009), the function of method and analysis are meant to happen simultaneously. There was a certain amount of literature required to review in order to gain an initial understanding of the workings of the film and television industry and how this may relate to the Logging System, as well as identifying preexisting frameworks that may help to explain certain processes. Once we had conducted our interviews, this raised new questions that we once again had to consult various documented resources in order to link to philosophical frameworks. By utilizing these sources throughout our research, we were able to capitalize on the information already gathered by the many researchers before us, and use their results to help us to understand ours.

Despite the best of intentions, however, it is a fact that our research design and methodology may have fallen short in some place. This will be examined in the next section, where we discuss our research limitations.

1.9. Identification of Thesis Limitations

Although our thesis aims to present a thorough and exhaustive analysis of every aspect of the commercialization process of the Praqo Logging System, we are aware of some limitations that this thesis has been subject to. To some extent, this is unavoidable when it comes to thesis-writing.

First, it has been challenging to obtain the most relevant and accurate data regarding film and television industries for each market, with a focus on post-production in particular. The most comprehensive and up-to-date industry reports, specifically centered on the U.S., are usually for-profit and can be extremely expensive. Sadly, our thesis budget did not allow us to obtain this material. Therefore, we had to search for whatever data was available through mostly online resources, a time-consuming and research-intensive process that can sometimes be subject to inaccuracies and interpretation. Furthermore, it was sometimes a challenge to find information on a market as small as the Norwegian film and television industry. Our

industry estimations are based on the best possible assumptions we could make on the basis of the data found.

Second, it has been difficult to determine how long the dailies management process takes with complete precision for both traditional dailies management as well as dailies management using the Praqo Logging System. Neither the idea provider nor film professionals can state accurately how many synchronizations are performed per film using the traditional dailies management system, mainly due to the lack of standardization in film processes. We have based our calculations on the limited research provided by the idea providers, along with some educated guesses derived from certain averages. In addition, there is currently no working prototype of the Praqo Logging System, so it is impossible to know exactly how long it will take to perform dailies management using this system. We have made the best estimations possible under the circumstances.

Finally, we have experienced some limitations associated with time constraints. While we are quite pleased with the final outcome of this thesis, we may have been even more satisfied if we had been able to use more time, especially to devote to interviews. This includes meetings with film professionals, actual end-users, and other people along the decision-making chain. We have performed a number of interviews regarding the Norwegian film and television industry, and we acknowledge their irrefutable value. This gave us a perspective and knowledge we could not have ascertained otherwise, and it would have been ideal to expand upon it further.

1.10. Reflections

Although academic entrepreneurship has not held much of a focus on the film and television industries, we are excited to lead the way with our thesis regarding Praqo AS and the Praqo Logging System. It was fascinating to learn about the inner workings of the film industry, including the forces that are currently shaping innovation therein, along with the particulars of the value chain. Furthermore, to help a budding start-up to develop and refine such an innovative and desired idea in such an industry provided an intrinsic dedication that one hopes to always find in academia. There was an incredible wealth of information that we were able to absorb through writing this thesis, and sadly we could only share the most relevant data within its pages.

We hope that the reader also feels our passion, from the elation of discovery in writing the technical study chapter, to the dedication we poured into the market study chapter. And finally, it all culminates in the business plan chapter, where we were able to use all of the aforementioned research to develop a thoughtful and extensive blueprint for commercialization. The intention of this thesis is of course to aid a start-up business in commercializing their product, but maybe we have also inspired some readers to devote their time to academic entrepreneurship in this arena.

2. Technical Study

2.1. Introduction

It is common knowledge in our modern business world that in order for a new company to succeed (or for an established company to maintain relevancy) in today's marketplace, that company must develop an intentional focus on innovation. The innovation process in a firm can be defined as 'a learning process through which a flow of new knowledge competencies and capabilities is generated.' This requires that the flow of new information is continuous in nature, path dependent, irreversible, and affected by uncertainty (Nieto and Mariano, 2004). Without the goal of being innovative, companies run the risk of remaining stagnant in a world full of commodity goods, where competition is cutthroat and customers are uninspired by what they perceive as 'old news.'

The Praqo Logging System certainly fits this definition of innovation. In this section, we are essentially trying to answer our sub-research question that deals with the more technical aspects of the innovation:

> *What is the innovative potential of the Praqo Logging System that can be assessed from an analysis of its technical functions, customer utilities and structural control?*

In order to do so, we will cover what exactly Praqo does, the specific elements that are new to the post-production industry, and why these elements are important for the end-user. We will also briefly examine some of the competition, the education and infrastructure required in order for this product to be launched, and perform an in-depth analysis on the specific categories of technical innovation that Praqo falls in to. By the time we have reached a conclusion to this section, we will have discovered the innovative potential of this system.

2.2. A Technical Description of the Praqo Logging System

Each day on the set of a film or television show, the producer and other key staff members view footage called 'digital dailies' (or just 'dailies') in order to determine whether a scene is acceptable or needs to be filmed again. Dailies consist of the synchronization of three types of files: video files, audio files, and script log files. Video files are captured using feature-film grade cameras and also require the visual cue of a clapperboard closing in the beginning of each scene. Audio files are captured using feature-film grade microphones, and rely upon the audible sound of the clapperboard closing in the beginning of each scene. This

is in order to pair the audio files based on the audible 'clap' with the video files based on the visual closing of the clapperboard. Finally, a script log is kept by a script supervisor, and is typically managed in an Excel file and may include written notations. The script log includes very detailed information with references to the scene, actors, wardrobe, etc to record details important for continuity on each take of the film. For example, the script log may mention that a candle in the scene is burnt halfway down. If the scene has to be shot again, there is a reference to the height of the candle for continuity purposes.

As the name implies, dailies are created and viewed every day of principle filming. The raw files must be backed-up, organized, synchronized, transcoded, and added into the editing system. This includes transferring the script log into an appropriate format (which may mean typing hand-written notes), changing the video files into one standard format, matching the video, audio, and script log files, as well as organizing and naming clips for various folders. This has to be done for every take before any editing can take place, and principle filming can last from 18 to 45 days. Finally, these files must also be delivered to the appropriate staff for viewing. Delivery of these files is sometimes done on DVD or hard drive, and is sometimes done using the cloud software Dropbox. This software is not meant for such large files, and subsequently utilizes excessive amounts of time for delivery.

It is the responsibility of an editor's assistant to complete these processes for each day of shooting (approximately 50 minutes of footage), with the help of a digital imaging technician. However, while a digital imaging technician has many other high-tech responsibilities on-set, dailies management is the *only* responsibility of an editor's assistant and takes him an entire work day for each day of filming. This means that if filming wraps on a Monday evening, dailies are not ready to be viewed until Tuesday evening, and so forth. An example of these basic processes can be found in Figure 2.

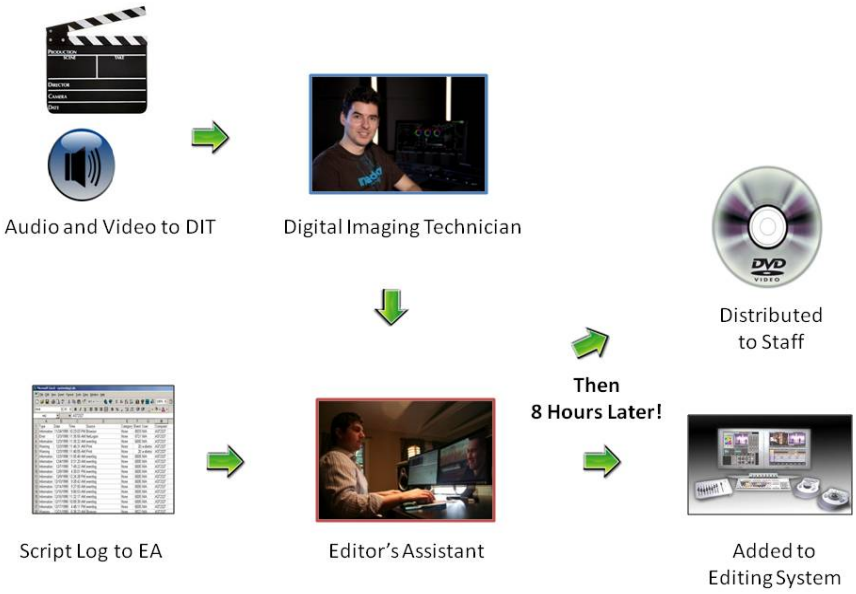


Figure 2: Traditional Dailies Management Diagram

The Praqo Logging System allows all of these processes to be completed automatically within minutes a day, rather than taking many tedious and grueling hours for a person to perform manually. It will consist of four items, found in Table 1.

Component	Functionalities
Digital Clapperboard App	Praqo has developed a digital clapperboard app that can be downloaded for free onto any basic tablet, such as an iPad. This app gives the tablet the functionalities of a clapperboard, with the addition of assigning a special QR code to each file, allowing it to be matched later with the corresponding audio files and script log.
Script Log Program	A special program will be developed by Praqo to replace the typical Excel document and written-notations used today to manage a script log. This new program will also assign a special QR code to each scene of the script log to aid in matching these with the video and audio files. This program will also be downloaded for free.
Synchronization Application within the Cloud	The application that will perform the backups, transcoding, organization, and synchronization of the video, audio, and script log files will be located within a digital cloud. These files will be compressed and uploaded into the cloud by the digital imaging technician. When they are complete, they will be distributed to the requested staff and added to the editing system by the cloud technology. Customers will pay for this serviced on a per-synchronization basis at 15 NOK per synchronization, and will arrange for payment or invoicing when uploading the files.
Web Server	The web server will allow for automatic payments at the time of upload, store the individual files as backups, and make the material available for viewing online from anywhere in the world for up to a year. This saves time and money as opposed to physically delivering DVDs or hard drives filled with material.

Table 1: Praqo Logging System Components

Rather than making hand-written notations on paper or using clunky Excel files, the script supervisor will be able to use a special program provided by Praqo to type notes into the script log. The Praqo Logging System software will later automatically match the script log with the corresponding video and audio files. Each video file is given a QR code, and this code is used to identify the point in time that the video was shot. Then using special algorithms that use the QR code along with video recognition and sound recognition (from the clapperboard), the files are matched along with the corresponding script log.

Due to the automated nature of the Praqo Logging System, the majority of the responsibilities that used to take an editor's assistant a full day to complete are now completed within a cloud in less than an hour. This allows film production companies to be flexible with the position of editor's assistant: this person can be given new responsibilities, cut down to part-time, or eliminated entirely. In addition, the system will provide the script software for organizing the reports of the script supervisor on-set for free, as well as a free clapperboard app. The Praqo Logging System will also automate the distribution of dailies to the key crew members. An example of these basic processes can be found in Figure 3.

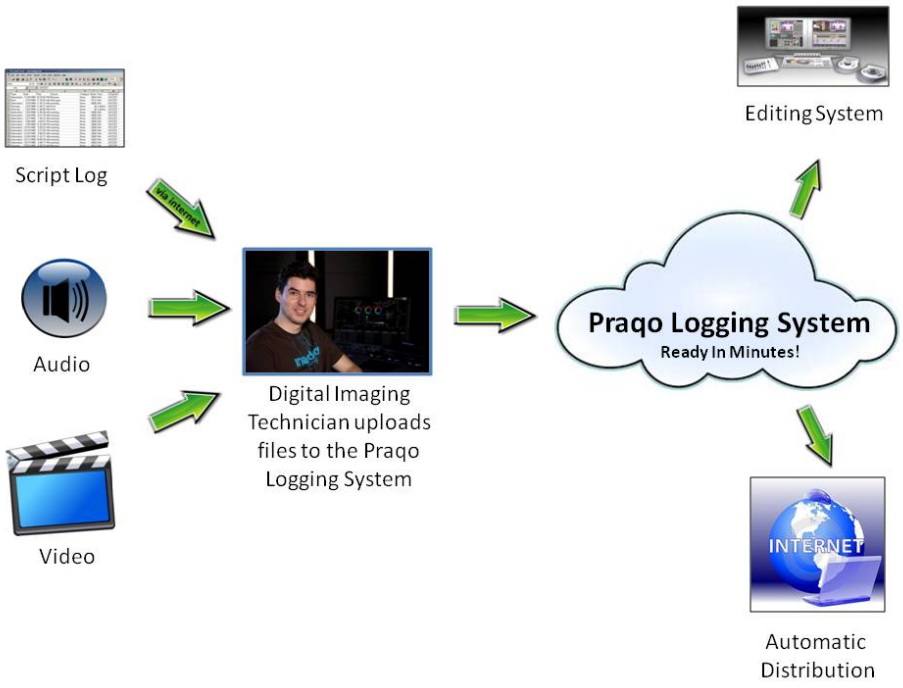


Figure 3: Praqo Logging System Diagram

While utilizing the Praqo Logging System will cut down tremendously on manual labor, most companies will still require someone to check the files once they are synchronized to make sure that all of the technical elements have operated properly. This task will most likely fall to the Digital Imaging Technician, a position that is already picking up more and more of the dailies responsibilities as technology progresses.

Another important component of the Praqo Logging System is that all of the synchronization and distribution functions are performed automatically utilizing cloud computing. A cloud is a complex infrastructure in which data can be stored and manipulated over a network, typically the internet. In this case, the managers of the cloud (Praqo employees) will be the only individuals who have access to the material within the cloud. For example, if a client uploads certain files to the cloud database, only the Praqo employees have access to that material. So the files are synchronized automatically within the cloud, and then distributed to the members who have requested them. This is important for a few reasons: A) the responsibility is completely taken out of the hands of the client, so user-error is very limited, B) the client has no access whatsoever to the technical operations within the cloud, so he is blind to the process. This means the process cannot be copied, and C) the cloud makes it possible for the files to be managed from anywhere in the world with an internet connection.

It is also an important point that the Praqo Logging System is completely independent of format and standard, and can be used in both film and video production. The sync program will be able to produce regular video files as soon as the raw material is clear without the need for an editing suite, which can be, at minimum, 400 NOK per day to rent. Furthermore, although there may be a small investment associated with the clapperboard, it is less than the traditional electronic clapperboard that is sometimes used today.

Advances in technology are always exciting, but they lack any real value unless the innovation can be put to use. The next section explains how a new software system that introduces so many new elements such as the Praqo Logging System can truly make a difference in the lives of real people, and the building blocks that help to get it there.

2.3. Identification of Customer Utilities Helps to Prove Viability

A value is a construction that at all times needs a purpose (Petrusson, 2004). It is not possible to estimate a value of a given intellectual property without a deep understanding of the underlying structures, the specific 'building blocks' in the process of value construction. It is agreed that the major challenge is to understand the real cognitive complexity of the value creation and this requires a deconstruction of the intellectual construction process (Petrusson, 2004). The entrepreneur needs to be able to uncover the intellectual construction process in order to clearly present the value to the potential investors and other stakeholders. Most importantly, however, the entrepreneur needs to understand for herself the building blocks of the business process so that she can "evaluate which intellectual properties to claim, how to communicatively act, and how to confidently make the correct strategic considerations" (Petrusson, 2004).

We have used a model map of the substantial building blocks in an innovation developed by Ulf Petrusson (2004) in order to construct an 'innovation map' for Praqo through which substantial claims can be visualized. This can be found in Figure 4.

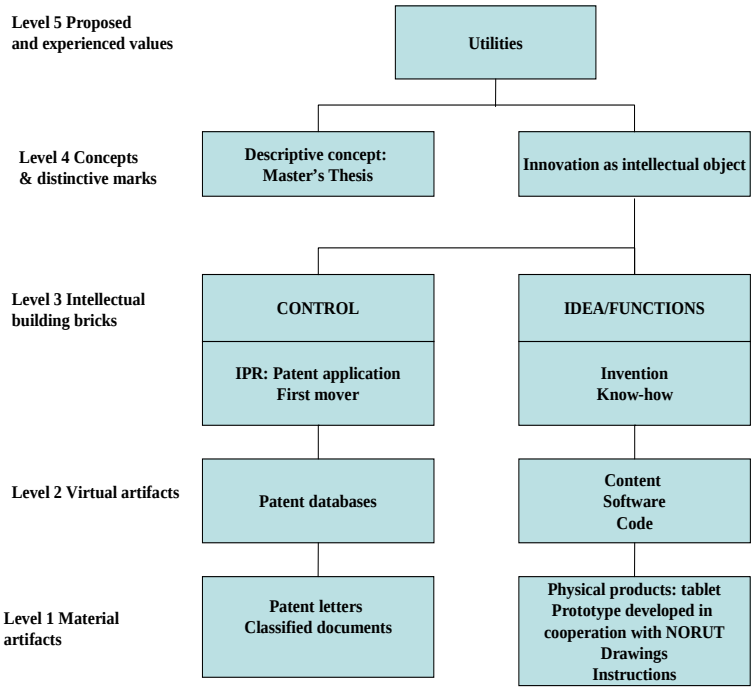


Figure 4: Innovation Map of the Praqo Logging System

. The main purpose for constructing an 'innovation map' is to strategically visualize which building blocks have to be claimed so that the innovation can be considered a commercial success. The model proposed by Petrusson allows for the analysis of the innovation on five levels: (Level 1) Material artifacts, (Level 2) Virtual artifacts, (Level 3) Intellectual building bricks, (Level 4) Concepts and distinctive marks, (Level 5) Proposed and experienced values. It is subject to the entrepreneur on which level the innovation will be assessed and consequently mapped.

In the case of Praqo, we are confronted with a conceptualized technical function that is inherent in a business idea and our task is to question how the innovation will be identified. Specifically, we need to question which technical functionalities, utilities, and other values are to be realized. According to the innovation map that we have created for the Praqo Logging System, it is evident that in order to be able to unveil the proposed and experienced values inherent in utilities, we need to analyze closely two intellectual building blocks which are (1) the structural control and (2) the functionalities of the technical idea. We begin with structural control.

2.3.1 Structural Control

According to the innovation model map proposed by Petrusson (2004), structural control can be analyzed on three levels, namely on a material artifacts level, a virtual artifacts level, and an intellectual building blocks level. According to Petrusson, the more that entrepreneurs realize the importance of intellectual properties, the more interested they become in structural control as it is exactly where the value lies (Petrusson, 2004). It is also claimed that an entrepreneur should aim at capturing the intellectual value by using and implementing concepts such as brands, company names, patents and other intellectual property rights. Patents, patent claims, patent strategies, etc are tools for the entrepreneur to design a structural reality (Petrusson, 2004).

On a material artifacts level, the Praqo founders are already in possession of documentation (patent applications) drawn up between the start-up and the patent attorney at Onsagers that assess the Praqo Logging System as a potentially patentable invention. It is directly intertwined with a level of virtual artifacts as several patent databases such as Espacenet, USPTO, Patentscope, etc. and other more robust search tools were used by patent attorney to assess patentability and identify the existing prior art. On a level of intellectual building blocks, Praqo applied for a patent for a method and system for organizing image recordings and sound recordings. Thus, Praqo is in possession of all patent application documents that contain patent claims, a detailed description of the invention, and drawings.

2.3.2 Functionalities of the Technology

In order to assess the value of an innovation in a start-up scenario, entrepreneurs are confronted with the array of technical functions that need to be translated into customer utilities as only then the entrepreneurs, investors, and other stakeholders can view the object of the investment as valuable. Thus, the entrepreneurs need to be able to uncover the customer utilities hidden behind the complexity of technology. The first step is to unveil the specific functionalities of the technology. We have identified a number of important functionalities relating to the aforementioned four components of the Praqo Logging System and we present them below.

- **Synchronization application within the cloud functionalities.**

1. Utilizes cloud computing for all automatic synchronization and distribution. All of the following functions in this section, including synchronization, organization, and

distribution, will be performed within a cloud, to which only Praqo employees have access. Clients will use the application software through, for example, a web browser or an iPad app, while Praqo will manage the infrastructure and platforms on which the applications will run within the cloud. This will allow the application to perform faster, and with improved manageability. It will also allow resources to be adjusted to a variety of future demands.

2. Transcodes various files into a standardized format. There are many different types of cameras being used on-set today in order to record video files. These each have their own specific format in which their files are stored. It is usually up to the editor's assistant or the digital imaging technician to render these files into one standardized format that can be easily manipulated. The Praqo Logging System does this automatically, saving time and costs of manual labor.

3. Organizes and synchronizes image recordings and sound recordings. The Praqo Logging System provides a method and system that simplifies and increases the efficiency of the process of organizing image recordings and sound recordings by matching them with audible synchronization indicators. In other words, the object of the Praqo invention is to provide a method and system which reduces the efforts associated with manually locating the image recordings and sound recordings of the same takes, so they can then be automatically synchronized.

4. Manages diverse reports and information. The Praqo innovation provides a method and system where information from the script log is matched to the corresponding image and sound recordings. Apart from the script log, there are other corresponding reports that need to be handled in the post-production process. The camera department may write a camera report, with information about lenses, filters, ISO, aperture and so on. In addition, the sound department may write a sound log with information about the quality of the sound recording. The Praqo Logging System is able to manage all of the reports that correspond with the script log, image recordings, and sound recordings simultaneously.

5. Transfers data into the editing system. After the synchronization and organization of the image and sound recordings along with the script logs and other reports, the Praqo Logging System will transfer all of this data into the editing system. Normally, such information is input manually by an editor's assistant while the Praqo invention does this automatically. This feature is unique to Praqo as none of the preexisting software programs for writing a script log can perform a simple transfer of the data into the editing system.

6. Produces dailies and distributes them via the internet. The raw and unedited material filmed each day is distributed to the producer and key crew members as ‘dailies’ for viewing the next work day. The distribution of dailies is usually performed by the editor's assistant or the digital imagining technician. The Praqo Logging System will produce and automate the distribution of dailies by allowing them to be downloaded from a protected website, possibly the same day as shooting occurs or early the next morning.

- **Script logging program functionalities.**

7. Provides a program for integrated script logging management. Praqo provides the users with a program for managing a script log, replacing the basic Excel documents that are currently delivered to the editors today. The script supervisor uses this program in order to write notes about each take of the film, providing very detailed information about each take. This program is integrated seamlessly with the other elements of the Praqo software, allowing the script log to be synchronized automatically along with the audio and video.

- **The electronic clapperboard functionalities**.

8. Provides a program for displaying visual and audio information codes. The traditionalclapperboard will be replaced by a digital clapperboard in the form of tablet, such as an iOS-based tablet (iPad), an Android-based tablet (such as Samsung Galaxy Tablet, etc.), or a Windows-based tablet. The electronic clapper device could also be a smart phone, such as an iOS-based smart phone, an Android-based smart phone, or a Windows-based smart phone. The electronic clapperboard will be loaded with the Praqo software which will generate and display visual and audio information codes that are captured by image recorders and sound recorders respectively. This is done in order to synchronize images and sound.

- **Webserver functionalities.**

9. Accepts automatic payments and delivers automatic invoices. One of the functions of the Praqo Logging System involves providing an infrastructure for performing payments online, on a basic per-synchronization basis, using a pre-existing software called Braintree. This can be altered depending on the needs of the end-user, such as alternatively accepting advance bulk payments. Options will include online transactions with payments by credit card or bank card as well as the possibility to obtain an invoice after the transaction is completed. All of the features associated with payment on the website will be automated and instantaneous.

10. Creates an arena for community interaction and discussion. Another functionality refers to the creation and management of the community around Praqo, in the form of a forum linked to the website. Here the end-users will be able to communicate with one another, share experiences related to the usage of Praqo, as well as a variety of post-production topics and interests. This could be well-received, due to the nature of the film-industry and its emphasis on local and global communities. It may be also linked to other social media such as Facebook or Twitter.

11. Assists in user training and customer service. Finally, Praqo will provide simple but useful training instructions on the Praqo Logging System and how it works. This might take the form of a short tutorial video as well as a 'Frequently Asked Questions' section. However, the elements of the program are expected to be so simple that little training will be necessary. This is important in overcoming human resistance to change. In addition, Praqo will provide customer service in order to assist end-users with any questions or problems they might face while using the Logging System. Customer service will also be a means of obtaining very valuable feedback from our customers that will allow us to develop the product further in order to meet the specific needs and expectations of the end-users.

As is made evident by the list of functionalities covered, the Praqo Logging System offers many features to the potential user. But in order to achieve successful commercialization, it is crucial that these features translate into utilities that create a benefit for the end user. Utilities of the technology are covered in the next section.

2.3.3 Utilities of the Technology

Close analysis and identification of the technical functions led us to the identification of customer utilities. The most important utility identified is the ability to significantly improve the post-production phase of professional filmmaking in terms of automation of the synchronization process, which impacts the timeframe of this segment of the post-production process. Furthermore, the automation of the dailies process results in a transformation of processes performed manually for decades. The customer utilities identified are presented below according to the four main areas of the Praqo Logging System.

- **Synchronization application within the cloud utilities.**

Reduces the time and costs associated with hand delivering dailies to the appropriate staff, reduces user error, and allows the user the freedom to access the information from any

place in the world. The costs and time spent by providing each required staff member with a physically DVD or hard drive with digital dailies can really add up, especially if these must be delivered to a studio from remote locations. By utilizing the cloud, these expenses are eliminated.

Since all of the organization and synchronization operations of the Praqo Logging System take place within the cloud by Praqo employees and the automated processes, this eliminates the possibility of user error associated with these aspects. It takes all of the hard work out of the hands of the user and allows them to simply wait for the finished product. This means they should get excellent results, every time, with little to no frustration and hassle.

In relation to the globalization of the film and television industry, there is also an increasing need to have material available at any time, and any place. Footage may be shot in a certain country one week, and the next week it is being shot on the other side of the world. Deadlines are also known to be exceedingly brutal in the film and television industry, and results may be needed immediately. Producers and other crew members need access to these materials no matter where they are, at potentially odd hours. The Praqo cloud allows them access at any time and any place, provided they can obtain internet service.

Furthermore, the ability for companies to outsource some of their work to different countries is becoming more and more prevalent. Being able to remotely operate using cloud computing and distribution could save companies large amounts of money. A Norwegian company may be able to utilize labor from India, Russia, or other parts of Europe where competency is high and wages are far lower. By utilizing this strategy, they can save 80% of every dollar spent on these outsourced labor costs.

Assures the user that script, visual, and audio processes can be performed independently, yet will still be easy to later synchronize with little user interaction. In film production, there are many different teams that work on different aspects of filming, such as the script supervisor, visual crew, and audio crew. Each of these tend to work independently of one another, although their results must, in the end, come together. By using the same system that is consistent across these teams, they can continue to work independently with the knowledge that their raw footage can be tied together quickly and seamlessly.

Allows more time for examination and decision making while operating on tighter budgets, and benefits from the use of one script writing program as opposed to several. The Praqo Logging System software will automatically synchronize the script log and other reports with the corresponding video and audio files, thus making the editor's assistant position reduced or obsolete. As a result, the whole process will take significantly less time and will reduce the overall cost of the synchronizing process by half. This means that producers will be presented with synchronized footage faster, which allows additional time for examination and decision making, possibly resulting in better art on a smaller budget. Time equals money, so overall this translates into cost-savings for the company in general.

In addition, the Praqo software is able to manage diverse reports that come along with the post-production process, as it uses one simple program for every log or report. This reduces the time spent in training and continues to streamline the process across all fronts.

Automatically puts synchronized footage into the hands of those who will continue the editing process, allowing for quicker work and less stress. Since the Praqo Logging System automatically transfers the film material into the editing system and also automatically distributes this information online, users have the completed information exactly when it is ready to continue being edited or reviewed. There are no long waits or time zones to take into consideration. The automated system delivers the material immediately so that crew members can get to work.

It must also be mentioned that Praqo is the only system currently developed that transfers data into the editing system automatically without the need to operate several programs. This is also a huge step towards simplicity and time and money savings, and help to set Praqo apart from the competition.

- **Script program utilities.**

Allows for a simple and consistent automated process throughout all the digital tools, a streamlined process using only one program, and provides editor's assistants with customized functionalities. Most importantly, the script logging program will be tied in with all of the other digital pieces, such as the audio and visual takes, so that once again organization and synchronization is a simple, automated process based on the matching of identification codes.

The script logging tool can be used for other logs as well, such as reports that stem from the audio and visual departments. This allows for a more streamlined process using only one tool, rather than having a disorganized cluster of documents that come in a variety of formats, possibly even hand-written.

In addition, while an Excel or Word document may work as a script logging tool in current processes, these programs were designed with a much broader intent, to be of use to any person from all walks of life. The Praqo Script Logging Program will be designed exactly with the film and television industry in mind. This will allow for more specified functionalities that will be directly relevant to script, audio and visual editor's assistants, rather than what is essentially a blank piece of paper.

- **The electronic clapperboard utilities**.

Provides a more efficient, attractive, clean, and versatile process and product than the traditional hardware clapperboard. The digital clapperboard records the same information as a traditional clapperboard, but it is what is done with that information that makes it useful. The app associated with the digital clapperboard records this information digitally, so the visual information can be automatically organized and synchronized along with the other components without the time and potential mistakes that can happen with a manual recording.

Also, while traditional clapperboards tend to be bulky and unattractive, a tablet is much smaller, more streamlined, and modern. The most basic of these traditional clapperboards require that information is written in chalk, which can smear and leave a mess. This tends to look unprofessional, and at minimum must be wiped off with every use. This means keeping track of other objects such as a chalkboard eraser or a wet sponge. Writing on the Praqo tablet is done digitally, leaving no mess and requiring no additional tools.

Although the more advanced electronic traditional clapperboards have none of these requirements, they can be extremely expensive, up to 10 000 NOK per unit. The app for the Praqo system will be free for download, while the corresponding hardware components that may need to be purchased are expected to cost under 2 000 NOK.

Finally, although a tablet will have to be purchased for use instead of a clapperboard, there are many more utilities a tablet can provide to those on-set during the production process, while a traditional clapperboard has only one utility. This makes a tablet a much better, and more useful, investment.

- **Web server utilities.**

Automatic payments and invoicing reduces waiting times and allows for immediate transactions at any time of day. Since the pay structure is pay-per-synchronization, users will be able to identify how many synchronizations will be required, and pay a fee on that basis using a credit card or a bank card. The automated system will then take care of the rest. There will also be options for different customers, as some with higher volume may want to make advance bulk payments. If an invoice is necessary, the system will automatically set one up for the client. This reduces the waiting time that may be required if only operating within normal business hours, relying upon actual personnel to take a payment.

Creates an arena for community interaction and discussion. According to our research on innovation and the film and television industry, those in production and post-production circles rely heavily upon media clusters and communities for news, information, referrals, etc. This is true whether in reference to intimate, local circles or broader, international circles. By adding a community building feature to the Praqo website, Praqo can not only meet the post-production needs of their clients but offer a forum where post-production issues (and film and television industry issues in general) can be discussed, creating a community that may be highly beneficial to all of those involved. Through the community function of a web server, Praqo will create a space for the users to share specialized knowledge and practices but also personal stories and experiences related to all areas of production and post-production.

*Enhances user's experience through user training and customer service.*In order to enhance the experience of each user, they will have the option of seeking out training and assistance with the Praqo Logging System if it is needed. These people will be given necessary attention, and an opportunity to provide important feedback that will be a valuable asset for further development of the software.

A summary of all functionalities and utilities can be found in Table 2.

No.	Functionalities	Customer Utilities
	Synchronization application within the cloud.	
1.	Utilizes cloud computing for all automatic synchronization and distribution.	• Reduces time and costs associated with dailies deliveries • Reduces user error by limiting interaction • Allows access to materials at any time, at any place in the world with internet access. • Potential for outsourcing work.
2.	Transcodes various files into a standardized format.	• Teams can continue to work independently knowing their raw materials can be synchronized quickly and seamlessly
3.	Organizes and synchronizes image recordings and sound recordings.	• Allows producers and other crew members more time to examine the footage, potentially resulting in better art. • Allows films to operate on tighter budgets, decreasing their bottom line and increasing funds for other areas. • Provides one system that handles many varieties of reports, resulting in simpler functions and an easier learning curve.
4.	Manages diverse reports and script information.	
5.	Transfers data into the editing system.	• Transfers data into the editing system automatically without the use of several complicated programs. Promotes simplicity and cost savings. • Enhances user's experience in terms of timing and flexibility, allowing the crew to get to work on additional editing and review immediately.
6.	Produces dailies and distributes them via the internet.	
	Script program.	
7.	Provides a program for integrated script logging management.	• Allows for simple and consistent automated processes so that all aspects work together seamlessly. • Reduces the programs used for various reports to only one, reducing confusion and the need for training. • Customized with more narrow functionalities with the film and television industry in mind
	The electronic clapperboard.	
8.	Provides a program for displaying visual and audible information code.	• Assists with synchronization of sound and image, designates each take for further identification. • Attractive, clean, and modern, requiring no additional tools for use. • Lowers the cost of the clapperboard compared to traditional electronic clapperboards

		• Enhanced functionality available for other areas of the production process
	Web server.	
9.	Accepts automatic payments and delivers automatic invoices.	• Reducing waiting time associated with operations that require personnel to handle. • Orders can be placed at any time of day inside or outside of normal business hours, from anywhere with an internet connection.
10.	Creates an arena for community interaction and discussion.	• Introduces social aspect mimicking media clusters and enhances users experience through engagement in social interactions and community building. Increases the sense of belonging to a group, builds networks, and permits the flow of knowledge.
11.	Assists in user training and customer service.	• Enhances users experience by providing guidance and individual assistance in case of troubleshooting. • Allows Praqo to gather valuable feedback from their customers.

Table 2: Praqo Logging System Customer Functionalities and Utilities

Now that we have established the functionalities of the technology and how they translate into customer utilities, it is important that the end users are given not only the knowledge to use such technology, but the ability and means to do so as well. In the next section, we will examine the additional steps that must be taken in order to achieve successful commercialization in terms of education and infrastructure.

2.4. Education and Infrastructure Required for Easy Integration

At present, Praqo is developing a prototype of the software with the cooperation of NORUT (Northern Research Institute) of Norway. Founder Jannik Kehlet has established relationships with certain production companies in Norway, and the prototype will first be tested within these companies. Due to the interviews conducted and relationships built by the thesis team, there are even more companies interested in serving as beta-testers for this product (such as national broadcaster NRK) and potentially becoming clients in the future.

There are some changes that will need to be made on-set and in post-production in order to implement this program. The Logging System will require a change from a traditional film clapperboard to a digital tablet, such as an iPad. It is the responsibility of the user to obtain the tablet, but the app that manages the Praqo Logging System will be free for download from standard app stores and the Praqo website. There are two corresponding

physical accessories that may also be used with the tablet, such as a matte box to reduce glare and a physical device in the shape of a traditional clapperboard that locks around the tablet, but these are not associated with a large expense and are, in fact, optional to use. The script log will also be written in a special script program developed by Praqo, instead of the Excel document as is commonly used today. All audio and video files will be loaded into a program that will synchronizes them into a file that later will be read by the editing program. The file will contain completely synchronized film takes organized in folders, named, with script log and all necessary information included.

The technology will be also be offered for free to any film school worldwide that has an interest in integrating it into their programs. This includes Den Norske Filmskolen (The Norwegian Film School) in Lillehammer, Norway. The use of Praqo will allow post-production to be quicker and easier for the students, but it will also be an opportunity for the students to be trained in these procedures and become used to them in daily life. When they enter the film world outside of university, it will be difficult for them to go back to a manual process, and they will be prepared to get to work with the help of Praqo. Most Norwegian filmmakers graduate from Den Norske Filmskolen, so educating them in this system will be beneficial to the company in the long run.

It is also of high importance for Praqo to be featured in the product review section of the national filmmaking magazine Rushprint (http://rushprint.no) and other similar industry journals and magazines. All of these elements combined will help to give Praqo legitimacy with industry opinion leaders.

Of course, even with adequate education and infrastructure, no technology is created within a vacuum. The Praqo Logging System is no exception. Although competing technologies have not been especially successful thus far due to a variety of reasons, competition is still real in terms of manual labor. These are examined in the forthcoming section.

2.5. Competing Technologies Fall Short

There are three overall categories of competition when it comes to the Praqo Logging System. These include script log software applications, video management software, and synchronization method software.

Script log software applications. These are the programs in which a script log is written. ScriptE is an example of such a program. Recently, QRSlate program has entered the market. This program can identify the video clips using QR codes and it can also link these to the notes made on an iPad in a very similar way to Praqo's system. QRSlate program, however, does not use the method for identification of sounds and thus, it does not have the ability to synchronize audio and video automatically.

Video Management Software. There are programs available that handle video storage online together with metadata management. These programs have not come very far in development yet, and are limited to some extent by the fact that it still takes significant amounts of time for data transfer. CatDV is an example of such a program.

Synchronization Methods. There are three synchronization methods used today that can be considered as competing technologies and methods:

- Editor's assistant as an employee performing manual dailies management. Synchronizing activities are performed by an editor's assistant. This is the traditional way to synchronize files and the most widely used method in Norway and in the world. This method is reliable and well-established in film and television industry.

- Clapperboard and script log software applications for tablets. Such applications have been in use in the past. Most do little other than to flash the screen while sending out a signal, and display the text that has been entered. Few of these are currently aimed at the professional market and none of them offer the automated handling of data that Praqo offers.

- Synchronizing the time code. These products are the closest to the Logging System, but they function in a fundamental different way. These systems synchronize the running time code in cameras and audio recorders. They require, however, that the camera and sound recording are synchronized with an external device several times a day. This system is widely known, but has proven to be very problematic.

Although competition is somewhat plentiful in this area, no company has been able to take the lead in digital dailies management. This may be due to the fact that most dailies management technology is weak, and does not perform as advertised. In addition, most competitors cover one or two elements of the three categories, but none cover all three - until now. The Praqo Logging System is the only system that we are aware of that offers a script

log application, provides video management software, as well as file synchronization. Table 3 is a summary of where the identified competitors lie in relation to the functionalities of the Praqo Logging System.

Functionalities:	Praqo Logging System	ScriptE	QRSlate	CatDV	Traditional Dailies Management	Clapper-board Apps*	Dailies Viewer	Plural Eyes
Utilizes Cloud Computing	YES	NO	NO	NO	NO	NO	YES	NO
Transcodes files	YES	NO	YES	NO	NO	NO	YES	YES
Synchronizes video & audio	YES	NO	NO	NO	YES	NO	NO	NO
Manages diverse reports	YES	NO	YES	NO	NO	NO	NO	NO
Transfers data into the editing system	YES	NO	YES	YES	YES	NO	NO	NO
Distributes dailies	YES	NO	NO	NO	NO	NO	YES	NO
Provides Script Program	YES	YES	YES	NO	NO	NO	NO	NO
Clapperboard app	YES	NO	NO	NO	NO	YES	NO	NO
Accepts payments/invoices	YES	YES	NO	YES	NO	NO	NO	YES
Community	YES	YES	YES	NO	NO	NO	YES	YES
Training & Service	YES	YES	YES	YES	NO	NO	YES	YES

Table 3: Competing Technologies

* Clapperboard Apps: 1. Digital Clapperboard; 2. Professional Digital Clapperboard; 3. Take One – Movie Clapperboard; 4. TIZA DSLR Slate® 20/20 Clapperboard; 5. MovieSlate® (Clapperboard & Shot Log); 6. DRSL Slate; 7.Clapperboard/Clapboard Slate; 8.MovieBoard – Clapperboard; 9.Professional ClapperBoard; 10.T-Kachinko; 11.SyncSlate Professional Clapperboard; 12. No Budget Slate; 13. 3D Slate.

While we have determined that the Praqo Logging System provides more utilities than the competition, they are certainly not the only company that will come up with such an idea. Praqo AS must take it's Logging System to the market quickly, before the competition has a chance to catch up. In order to do so, it is important to identify where the Logging System falls as a technical innovation. This will determine the path that Praqo should take when commercializing their idea.

2.6. Where the Praqo Logging System Falls as a Technical Innovation

There are many different ways of innovating that are often determined by the kind of company doing the innovating and the product in question. Below is a discussion centered around some of these innovation variables, beginning with an examination of service innovations. The discussion will then turn to an examination of sustaining versus disruptive innovations, and finally radical versus incremental innovations. These discussions are of extreme importance in relation to the Praqo Logging System, as their results directly determine the most appropriate way to commercialize the technology and introduce it to the market. Each section will end with a focus on how it relates to Praqo, and how the innovation type will affect later decision making about marketing the software.

2.6.1 Product, Service and Process Innovations.

There are three main categories that companies can choose to focus on in order to foster innovation: product, service, or process. While these are sometimes referred to by different names in the literature, the theory behind them remains generally the same. The Praqo Logging System has been determined to be a process innovation.

A process innovation refers to new company developments that improve a production process or supply chain operations (Susman et al, 2006). This often translates to a lower cost or less hassle for the customer. Wal-Mart has been very successful at this. Although they offer the same products as other supercenters such as K-Mart and Target, their ability to innovate in the production process and ability to cut costs allowed them to pass those savings on to their customers, giving them the competitive edge. Dell Computers is another great example. By eliminating the middleman (such as Best Buy or Wal-Mart) they are able to offer their customers factory-direct prices, along with enhanced customization, delivered right to the customer's door (Treacy and Wiersema, 1995).

Much research has been done on how to encourage process innovation within companies. Lager and Hörte (2001) have identified that the factors that influence process development in general differ from the factors that influence process innovation. Process innovation relies more upon the climate of the internal work environment and the strong potential to generate new ideas, while process development relies more upon communication within the production organization. These two factors should be clearly distinguished when putting a focus on process innovation.

According to Treacy and Wiersema (1995), the companies with a focus on process innovation are concerned with four features. To begin, these include basic services and supply chains that have been optimized and streamlined to minimize costs and hassle. Second, there is a focus on operations that are standardized, simplified, tightly controlled, and centrally planned, leaving few decisions to the individual employee. Third, they appreciate managers that focus on integrated, reliable, high-speed transactions. And finally, a culture that rewards efficiency and does not allow waste is required in these companies.

The Praqo Logging System is a process innovation, as opposed to a product or service innovation. It directly improves the production process for post-production work in the film and television industry. As described earlier, the synchronization of audio, video, and script logs had been previously done manually by a person known as an editor's assistant, and took hours a day to complete. The distribution of dailies were also done manually, with the files being individually delivered to the appropriate recipients by the editor's assistant or the digital imaging technician. These processes have been completely revolutionized by Praqo, and are entirely automated utilizing computer software. These processes can now take minutes a day rather than hours.

We can compare Praqo to the criteria for a process innovation laid out by Treacy and Wiersema (1995). The development of the Praqo Logging System will allow the elimination of what has become a redundant position in the post-production industry. So not only will an incredible amount of time be saved with this product, but hours of manpower that will have been translated into salaries or hourly wages will be saved. This shows how Praqo streamlines the process in the first Treacy and Wiersema requirement, to 'minimize cost and hassle.'

Another important element of the Praqo system is that all of the technical processes take place automatically within a cloud. The user makes the files available that must be synchronized, the automated system does its work without any further input, and then

distributes them to the appropriate people straight away. This leaves no room for user error, and leaves very few decisions up to the individual. The whole process fits the second requirement, to be 'standardized, simplified, tightly controlled, and centrally planned.'

Finally, a focus on 'reliable, high-speed transactions and efficiency' are a combination of the last two criteria, and further proves how Praqo fits as a process innovation in the post-production end of the film and television industry. According to the idea providers, the Praqo Logging System will work reliably every time. We have also discussed how the Praqo Logging System is a much more timely and efficient system than the one currently being used.

The globalization of post-production allows film makers to draw from a much larger selection of post-production companies worldwide, rather than regionally as in the past. Therefore, fitting to the criteria of a process innovation will be extremely important to the survival of Praqo as a company. Revolutionizing the post-production process, along with minimizing costs, standardizing the system, and remaining reliable and efficient will allow Praqo to truly operate as an up-and-coming competitor in the global market.

2.6.2 Disruptive versus Sustaining Innovations.

Disruptive and sustaining innovations refer to amount of impact an innovation has on the market. There are several criteria for determining whether an innovation is disruptive or sustaining (Crooker et al, 2009). First of all, one must examine the impact on customer operations, where high impact equals high disruption. Second, the impact that the new product may have on the industry must be assessed, where high impact equals high disruption. Third, one needs to evaluate the level of new services required by the product, where a high level equals high disruption. Moreover, one must also know whether the product would attract low-end customers or new customers to the market, where a high attraction in either category equals high disruption. Finally, the level of integration in the customer's existing processes must be clear, where challenging integration equals high disruption.

Sustaining innovations are a much safer bet than disruptive innovations. They improve an established product in ways that customers expect, appreciate, and desire. Established firms almost always win in battles of sustaining innovations, as they have been refining their strengths of resources and processes for years, sometimes decades. A current example of a sustaining innovation is the iPhone 5 vs. the iPhone 4 – the same technology, just done better.

Disruptive innovations are 'scientific discoveries that break through the usual product/technology capabilities and provide a basis for a new competitive paradigm' (Kassicieh et al, 2002). Furthermore, a disruptive innovation (Thomond and Lettice, 2002) is said to meet the unfulfilled needs of an emerging or niche market. It also has performance attributes not immediately valued by mainstream markets and it enables investments to increase performance with niche market adoption. In addition to that, a disruptive innovation influences change in what the mainstream market values as awareness increases, and that value change allows the product to disrupt and replace old products.

When a firm attempts to challenge a competitor utilizing a disruptive innovation, this will generally either (A) attract a brand new customer base that takes root outside of the existing market, or (B) it will attract the competitor's low-end customers and spur new growth. Disruptive innovations are also known for initially resulting in poor performance compared to already established products in mainstream markets. But over time, the innovation improves under the radar, and customers eventually leave the established firms in order to seek out the disruptive innovation. Those established firms are then forced to peddle their old technology while the new products thrive (Raymond, 2010).

Skype is a great example of a disruptive innovation. It was a product that was developed for what many companies assumed was a niche market. However, over time it began to catch on under the radar, and today it is used by millions of people and is surely damaging the long distance and overseas sales of traditional telephone companies.

Research suggestions that growth based on disruptive innovations is preferable to growth based on sustaining innovations. Start-up firms and established firms alike can almost always gain traction using a legitimate disruptive innovation, as they are not forced to compete on the basis of resources and well-known processes of their competitors. The disruptive innovations tend to be cheaper, smaller, simpler, and more convenient than their predecessors (Thomond and Lettice, 2002).

Although it is difficult to determine whether a process is disruptive or not due to the fact that a disruptive innovation must be *proven* disruptive before it can be positively identified, the Praqo Logging System definitely has potential for disruption. It is introducing new technical capabilities in order to synchronize and distribute data via the software cloud, as opposed to the non-technical way these things have been done in the past: manually by an employee. While the Praqo Logging System will be very useful for filmmakers at all levels,

from the international conglomerates to the student filmmaker, it can first make the biggest impact by siphoning off what may be considered the less desirable customers. These may include independent film studios, small professional filmmakers worldwide, film school students, and any individual or company that may produce films without great profits. This can also refer to certain markets that may be less desirable than others, such as smaller markets with less robust film industries.

This system works, because rather than selling the software package for a one-time price that would need to be quite expensive in order to make financial sense, the software is completely free, and the app that runs on the hardware is free as well. It is up to the user to obtain the tablet and its corresponding accessories which are used in the production phase, but these are expected to be available at a very low cost. The user is then charged *per film-synchronization.* This means that even small, independent filmmakers with small budgets can afford to have their work synchronized and distributed without making a large investment in a software package that may only be used a handful of times. These customers are ones that more established post-production companies would not be afraid to lose - as more established post-production companies already have relationships with the few companies with the deepest pockets. And in the increasingly global marketplace, there are possibly millions of these potential customers looking for a solution just like Praqo. An editor that the thesis team interviewed thought the cost structure was a great idea:

> *"It is a cool model. For instance, in our editing house we have only two editing rooms. There used to be more and we can scale up if we need it, but it is expensive to have software just sitting there... So I like the idea of the structure."*

In the long-run, of course, Praqo would also like to attract the larger filmmakers as well, the international conglomerates that release blockbusters in many countries and in hundreds of languages. But gaining traction with the less desirable customers will allow Praqo a foot-in-the-door within the film community. No longer will the company be an unknown name and an untested product: there will be many Praqo users that can attest to the functionality and reliability of the software.

2.6.3 Radical versus Incremental Innovation

Radical innovations and incremental innovations each lie at opposite ends of what can be considered the scope of innovation: is it a competence destroying innovation that makes

existing knowledge obsolete, or is it a competence enhancing innovation that builds upon existing knowledge?

Incremental innovation is much more common than radical innovation; in fact, the vast majority of innovation is incremental. While radical innovation wipes out the need for existing products, incremental innovation not only allows for existing products to remain, but increases their relevancy by building upon them and making them better. For example, the Apple iPod is an incremental innovation. When it first came out, there was only one model that played mp3s. Now there are several models, some with touch screens, some without, that store a variety of files including mp3s, mp4s, and photos of all formats.

According to Rice et al (2002), a radical innovation must display at least one of these three criteria to be considered radical: (A) new to the world performance features, (B) five to ten fold, or greater, improvement in known performance features, or (C) 30% to 50%, or greater, reduction in cost. Raymond (2010) agrees: a radical innovation is 'a product, process, or service with either unprecedented performance features or familiar features that offer significant improvements in performance or cost that transform existing markets or create new ones.' These do not often fit what the market wants, because the customers do not yet know that they want it. The digital camera is a great example of a radical innovation: while people have been taking pictures for decades, taking this technology digital entirely changed the way that people preserved and organized their memories.

The benefits to developing a radical innovation can be considered the highest among innovations. By the nature of being radical, the company that releases this sort of innovation becomes a first mover, which can be a huge advantage in the marketplace. Once a radical innovation catches on, it will likely need support products to go with it, which allows for a whole range of products in the new sector. This will also catch the attention of stakeholders at all levels of the value chain, making the innovative company one that others want to do business with. And finally, radical innovations have the potential to make the inventor very wealthy if they are able to open up a brand new segment of the marketplace.

However, there are two serious challenges that firms must face when it comes to developing radical innovations. The first is that they are time and capital intensive to create. Innovation does not happen by itself, and it must be encouraged, fostered, and made a priority. This accounts for many of the problems small to medium sized firms have in being innovative: they simply do not have the resources to support projects that may only become a

financial drain. Second, by their very nature radical innovations are surrounded by uncertainty, both technical and market. Since they consist of a brand new way of doing things, it is difficult to predict whether the product will function as planned, when it will be finished, and if the market will be interested in the results (Ali et al, 1993).

We have determined that the Praqo Logging System is potentially a radical innovation. According to the definition suggested by Raymond (2010), Praqo fits the criteria. The current standard is to use manual labor to complete the tasks that Praqo performs automatically, which introduces an entirely new performance ecosystem to post-production file synchronization and distribution. Software has not, up until this point, been used successfully to achieve these results, and there are no other companies offering software packages that include all of the features that Praqo offers to the film and television industry.

The customers in question, determined in the previous segment to be those on the fringes of the customer base, have been synchronizing film manually for the past several decades. It can be difficult to predict how radical innovations will sometimes be accepted into an industry, since they can include a brand new way of doing things. However, in this case, one may suspect that the industry will be more accepting than others, due to its constantly changing nature.

It is clear that the digitalization of the film and television industry can be seen as a super-radical event. A super-radical innovation generates a new technology eco universe, comprised of multiple radical technology innovations (Raymond, 2010). Digitalization has changed the way everything is done in the film and television industry, and has even further reaching consequences to socialization, art, personal expression, finances, and much more. Praqo as a radical innovation follows in line with this trend of the film and television industry. It takes what used to be a manual process, and it has transformed it into a digital one. It is the natural progression of all aspects of the film and television industry, from production to distribution to post-production, and every avenue within. The industry *must* adapt, as it is carried along by the unstoppable tide of change, and it is only a matter of who will be the first to bring each element of this adaptation to the forefront.

Table 4 summarizes the main points of the Praqo Logging System as a Technical Innovation.

No.	Praqo Innovation Type	Implications for the Future
1.	Process Innovation	• Minimizes cost and hassle • Is standardized, simplified, tightly controlled, and centrally planned • Focus on reliable, high-speed transactions and efficiency • Globalization allows for more competition
2.	Disruptive Innovation	• Introduces new technical capabilities to a traditional industry • Begin by marketing to the less desirable customers • Develop a name and reputation without the need to compete with the pre-existing software companies
3.	Radical Innovation	• Introduces a new performance ecosystem to the genre • First to use software to achieve desired results • Difficult to gather accurate market material on radical innovations due to market uncertainty • This is the natural progression of the industry, due to the super-radical innovation of digitalization

Table 4: Praqo as a Technical Innovation

Judging from this discussion, it is now clear how the implications of its status as a process innovation, a potentially disruptive innovation, and a radical innovation will affect how the Praqo Logging System should develop and will be brought to the market. As a process innovation, it is of the utmost importance that Praqo continues to develop in the direction of reliable and efficient synchronizations that can be delivered globally with little interference from the user. As a potentially disruptive innovation, Praqo should choose a market that is less desirable on a global scale and build legitimacy and brand-awareness there. Furthermore, as a radical innovation it has broken through technology barriers by providing a reliable way to manage dailies, which changes the entire way that dailies management will operate in the future.

2.7. Conclusion

Based upon the information covered in this study, it becomes clear that the Praqo Logging System is ripe for commercialization on a technical level. The technology itself takes the most basic of processes, something done through manual labor that is neither inspiring nor educating, and brings it into modern day by allowing advanced computer system to do all the heavy lifting. This is the direction that not only the film and television industry is moving in,

but the world. The value that it creates brings not only a true benefit to individual employees, but to the advancement of art and knowledge through film as well. Furthermore, when viewed in terms of structural control, Praqo is in a perfect position to commercialize its product, with a patent pending and the opportunity to protect its technology and benefit from it in other countries as well.

We are not suggesting, however, that it will be an easy road. There are challenges in education and infrastructure that will require perseverance and dedication. The competition is also hard at work attempting to create a technology that will solve the pain in the market. But thus far, Praqo has been lucky enough to develop a technology that is reliable and desired, and the last piece of the puzzle is bringing it to the market before the competition. Through examination of various innovations and how they are treated in a start-up scenario, this technical study has led the way for the next logical step: examining the market and developing a plan that takes advantage of all of the technological benefits that Praqo has to offer. Which brings us to the Market Study, found in the next chapter of this thesis.

3. Market Study

3.1. Introduction

When a startup company decides that it wants to go past the 'idea' phase and bring a product to the market, there are a number of things to consider before taking that first big step. The company in question not only has to evaluate its own offerings, but which market those offerings serve, and how to best present them to the pre-existing marketplace. Furthermore, the current state of the market, especially in regards to established or potential competition, is crucial for evaluation (Porter, 1980). Without this information, the chances for success for the startup company are extremely slim.

These considerations are so important that we have devoted this entire chapter to our second sub-question, which is concerned exclusively with the market aspect of potential commercialization:

> *What is the potential of Praqo's market opportunities and which market is best for the Praqo Logging System?*

This is where the technical study from the previous chapter really begins to show its value. By dissecting and understanding the technology of the Praqo Logging System and its implications for the end user, we can explore topics such as which markets may make the best use of the technology, how to segment those markets based on customer utilities, and what strategies to use for this specific type of technology when entering the market. In this way, our decisions can be solidly made based upon research, and not only upon assumptions. The technical study will later combine with the market study to provide a solid foundation for the details of the business plan, found in the next chapter.

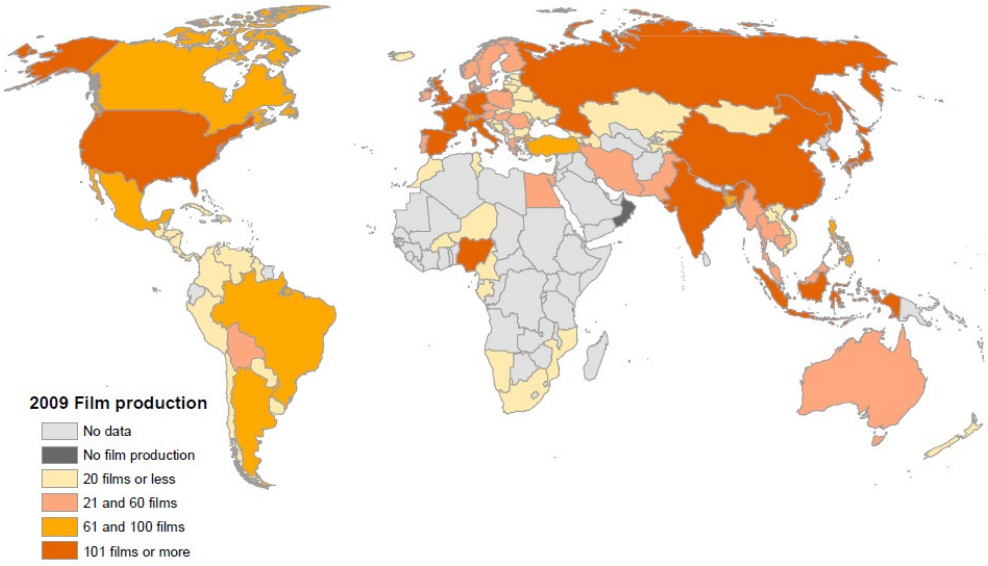
3.2. Market Analysis of Norway and the United States

A market analysis is crucial for commercialization of the Praqo Logging System. This largely involves in-depth coverage of the most likely markets for entry. While some markets may seem attractive on the surface, it is possible that further review may prove that they are unsuitable targets for a variety of reasons (Byres et al., 2008).. In this section, we will address the state of the film industries in two countries which seem most desirable for commercialization. This will include an examination of their economic performance, general

operations, profitability, and recent growth. Furthermore, we will examine the most prevalent of current and expected competition in these markets, and their individual state of affairs.

The modern film and television industry has touched nearly every country in the world, where films are not only distributed and exhibited but also conceptualized, filmed, and edited for their own international distribution. In addition to the scope of hundreds of countries touched by the film and television industry, they all have varying models for their inner-workings. Furthermore, even within a single country there can be thousands of companies that perform their tasks to their own tastes. There is little to no standardization when it comes to film and television industry operations, even within the same city.

In order to demonstrate the true breadth of the industry, global revenue figures help to put it into perspective. Even by examining only a portion of the film industry, it is staggering to note that the production and distribution segment rakes in an enormous 700 billion NOK annually worldwide. This does not even account for theater exhibition, which often pads these numbers significantly. It is largely controlled by business centers in the U.S., India, Hong Kong, and Nigeria. Infrastructure and labor costs are often the reason that a film may be paid for in one country, and produced in another, with some countries taking full advantage of these discrepancies (Movie and Video Production Industry, 2013). Figure 5 demonstrates where the highest concentrations of films were released by country in 2009, with India in the lead, followed by Nigeria, and then the United States.



Source: UNESCO Institute for Statistics, January 2012.

Figure 5: Global Map 2009 Film Production

With this information in mind, this section will show a particular focus on the countries in which Praqo may choose to launch within the next five years. These include the film and television industry in both Norway and the United States.

3.2.1 The Norwegian Market Fits Criteria for Initial Entry

The first country for analysis is Norway, chosen for a number of reasons, including the professional experience obtained within this market by founder Jannik Kehlet. This provides him with an-depth knowledge of the Norwegian film and television industry that one can only gather from within. In addition, he has already established a network of professional contacts within this market. These relationships may be crucial for the initial trust needed to convince potential customers to give Praqo, a yet unknown company, a chance. Furthermore, the Northern Research Institute (NORUT) has agreed to cooperate with Praqo in order to develop a working prototype of the Praqo Logging System. This assistance will be highly beneficial in terms of costs and competency required to product the best product possible.

Research conducted in the technical study chapter of this thesis has also determined that the Praqo Logging System could be a potentially disruptive innovation. This leads to a strategy of market entry that begins by targeting less desirable customers in order to build legitimacy. On a global scale, Norway can be considered a market full of less desirable customers largely due to its small size. For these reasons, Norway is a great place for Praqo to launch its services and build legitimacy under the radar while competitors focus on more robust markets.

The Norwegian film and television industry operates in a different manner from many other film industries, in line with the more socialist, egalitarian views the country holds on political and social fronts. The industry can be viewed as an extension of the country's politics, putting a high value on collaboration and cooperation rather than the ascension of the individual. The history of cinema in Norway is more focused on great films that have been made, and not the great directors, actors, or producers who helped to make them. In fact, many Norwegian directors are only known for one film, rather than a set of films that they are associated with (Chandler, 2010).

There are also no 'big' production companies within Norway, at best there are two medium sized companies and a handful of smaller ones. Maipo Film and Nordisk film are the largest production companies, followed by other notable companies such as Motlys, Paradox

Films, Dinamo Story, Speranza Films, Filmkameratene, and Bul Bul Films (Bondebjerg and Redvall, 2011). In fact, there are only 12 regularly active production companies in Norway and 6 major distributors (Uhan and Mreza, 2009). Between the years of 2002 and 2006, 95 companies produced films in Norway, but most of them made an average of one or two films each, and some averaged even fewer (Bondebjerg and Redvall, 2011). Storyline Studios is considered the biggest studio in Norway, and the three most notable post-production houses are Storm Studios, Shortcut, and BUG (Barraclough, 2012).

The growth of the Norwegian film market is undeniable. In 2002 there were 15 Norwegian national releases with just under 1 million admissions, a number which has grown steadily over the years to a reported 33 Norwegian national releases with just under 3 million admissions in 2011. Norwegian movies are also proving to be popular with Norwegian audiences, with nearly a third of the top 30 movies of 2011 being national productions (Norwegian Film Institute, 2012). In fact, 2011 was a banner year for the Norwegian film and television industry, revealing an all-time high production rate, an all-time high in domestic grosses, and one of the biggest market shares ever (Svendsen, 2012).

Not only has this success been seen at home, but foreign sales in 2010 represented record highs for Norwegian films. They have increased more than six-fold since 2002, and were two thirds above the goal for 2010. This means every third Norwegian cinema feature was screened in other European countries, with every fifth spectator being of non-Norwegian origin. Not bad for a country with a record high of 33 national releases per year (Aas, 2012)!

Another notable difference between this film and television industry and many others is the amount of money at the disposal of Norwegian filmmakers. There exists a solid subsidy support system (Nederlands Film Fonds, 2012), contributing up to 75% of a film's overall budget. This money comes from the Norwegian Film Institute, Nordic Film and TV Fund (Uhan and Mreza, 2009), the 11 various regional centers located across the country, each with their own funds (Barraclough, 2012), along with funding provided by distributors, rental houses, pre-production companies, and production companies. In fact, a producer can get up to 50% of his film costs covered just from the Norwegian Film Institute, and never be expected to pay any of it back.. The average production budget in Norway is about 18-22 million NOK, and shooting time can last up to 45 days.

While Norway is a small market in terms of film and television, there is certainly enough to give Praqo a solid start and prove its worth. In 2009 there were 27 feature films

made in Norway(20 of these national productions, 7 co-productions), with an additional 300 short and documentary films produced for a total of 327 films. These are considered average yearly figures for the Norwegian film industry (Film Commission Norway, 2009). The price per-synchronization in Norway will be 15 NOK, resulting in a price per-film of approximately 22 500 NOK when utilizing the Praqo Logging System.

When it comes to television, there are about 15 nationally-broadcasting stations in the country (Ranker, 2013). If we approximate that each of these stations creates 3 shows of original programming, each with 12 episodes apiece, that results in 540 new episodes airing on Norwegian TV a year. Since TV shows are shorter than the average film and require fewer synchronizations, it is estimated that each TV show would cost approximately 11 250 NOK per episode in Norway with the Praqo Logging System.

Therefore, based on our calculations, we estimate a yearly market of approximately 13.4 million NOK in the Norwegian Film and television industry that Praqo will have the opportunity to access. We anticipate reaching 40% of the market by year 5 of commercialization.

The best way to utilize Norway in the expansion of Praqo may be as an initial test market, where the founders rely on their personal networks within the country to garner some positive reviews. Then once legitimacy is obtained, they can branch out into other countries. This tactic also fits that of a potentially disruptive innovation, which will be explored later in this chapter. For this reason, we will tend to focus on Norway as the first primary market, although much of our research can be applied to the U.S. market as well.

3.2.2 The United States Market Provides Many Opportunities for Success

The second market of focus will be the United States. This market has the third largest film industry worldwide in terms of films released (following India and Nigeria), and is the leader in terms of revenue, along with a very successful history of television show production. The social and business cultures of the United States and Norway are also quite similar, which should make for a smoother transition from market to market. Furthermore, Praqo has its own ties to the U.S. as one of the founders has permanently relocated to California, the hub of film and television activity in the country.

The United States is responsible for 350 billion NOK in revenue a year from the motion picture production and distribution industry. There are approximately 11 000

companies operating in this segment, with the top 50 companies generating 80% of the profits (Movie and Video Production Industry, 2013). Post-production alone generated 35 billion NOK in revenue in 2012, supporting 2 441 businesses in the U.S. which employ nearly 27 000 people (IBIS, 2012). Out of all of these firms, only 11 boasted more than 250 employees. Most have nine or fewer, which leads to many niche service providers (PR Web, 2012).

Leading up to the U.S. economic recession, post-production companies were showing strong growth from year to year, but then revenues began to quickly fall. This is due to a variety of reasons, including widespread adoption of new digital media which has negatively affected the industry's range of services (IBISWorld.com, 2012), as well as drops in pricing due to new low barriers to entry, and new collaborative editing tools which make it easier to outsource overseas (Potter, 2013). In fact, the post-production industry made #10 in industry report generator IBISWorld's Top 10 Key Dying Industries in the U.S. for 2012. From the year 2000 to the year 2010, this industry was subjected to a 25% drop in revenues, and is expected to decline another 11% by 2016. This is clearly having an effect on post-production houses, as within the same time period there was a 43% decline in the number of establishments, with a projected continuing decline of 38% by 2016 (IBISWorld.com, 2012).

However, this is not necessarily bad news for Praqo. While the future for post-production houses isn't looking good, this does not mean that post-production will stop. It just means that the companies performing post-production will change. Rather than outsourcing this work to post-production houses, companies will absorb the expense by performing their own post-production in-house. Such companies will include film and television studios along with film and television production companies. Furthermore, post-production houses are currently experiencing a focus on cost-reduction due to the state of their industry. This could work in favor of Praqo, as the Logging System can help such companies to save money in the long run by preventing costly mistakes.

Tackling Hollywood and its most famous 'Big Six' studios may seem like an insurmountable task for a start-up company to undertake. But it is important to remember that these famous and successful studios only account for 30% of the American films released. While these films do account for the majority of audience shares and box office revenues, 70% of American films are released by independent companies (Skei, 2010). In the case of Praqo, it is more important to target companies with higher quantities of films being made,

rather than targeting companies with the most successful films. Since payments are made on a per-synchronization basis, the more films produced, the more revenue Praqo will create.

There is also growth to be seen in the United States film industry overall. Although the past decade or so has seen the number of feature films produced in the U.S. hovering around 700 per year (UNESCO, 2010), the U.S./Canadian box office figures were at $10.2 billion in 2011, a 6% increase from five years earlier. With the easier accessibility that digitalization has brought to independent and private filmmakers within the industry in terms of financial considerations and training, the next few years should see a continuously growing market in terms of number of films made and revenues created. In fact, there is already estimated to be a modest growth rate of 4.6% in this industry through 2015 (PricewaterhouseCoopers 2011).

According to our figures, the United States film industry is about 19x the size of the Norwegian industry. With the average of 700 feature films per year, we can estimate (based on the Norwegian figures) that there is approximately an additional 8 000 short and documentary films made per year. The price per synchronization in the U.S. will be 6 NOK, resulting in a price per film of approximately 9 000 NOK when utilizing the Praqo Logging System.

When it comes to television, there are approximately 2 200 stations operating in the United States (World Fact Book, 2006). Even if we assume that only half of these make their own original programming, at 3 shows per station with 12 episodes each, that makes a total of 39 600 episodes per year. Since TV shows are shorter than the average film and require fewer synchronizations, it is estimated that each TV show would cost approximately 4 500 NOK per episode in the U.S. with the Praqo Logging System.

Therefore, based on our calculations, we estimate a yearly market of approximately 256.5 million NOK in the United States Film and television industry that Praqo will have the opportunity to access. We anticipate penetrating 7% of that market by year 5 of commercialization.

Table 5 summarizes the main points discovered about the U.S. market and the Norwegian market.

	U.S.A.	Norway
State of the Industry	Growing overall, with a relocation of post-production services from post houses to production companies and studios taking them in-house	Signs point to growth both domestically and internationally, fueled by record high production rates, domestic grosses, and market shares in 2011
Sources of Funding	Mostly private, centered around loans that must be re-paid	Relies upon 75% of funding from governmental subsidies that are never re-paid
Strengths	The most successful film industry in the world in terms of revenue, a growing market, and an English speaking workforce. Financial constraints may work in the favor of Praqo, as the software can help in saving money for struggling companies.	Founders have pre-established network, the market is growing, and companies may be enthusiastic about a Norwegian product
Concerns	Players in this industry may be too big to break into initially with no references or legitimacy	Very small industry, few troubles with finances, more legwork in terms of relationship building
Opportunity for Praqo	Become a player in one of the most major film markets in the world & take advantage of financial constraints	A growing industry means more films that require dailies management

Table 5: Market Summary and Main Points

Although Praqo does intend to become a worldwide name, as a start-up company they must begin somewhere. Norway is a great place to start in order to prove the product and build legitimacy, while the United States supports an enormous market with limitless opportunities. If entering these markets is done properly, there is much success to be had that can lead the way for further international expansion. But before entering a market it is crucial to understand the players that are already operating there. While we performed a technical comparison of some of Praqo's competitors in the technical study, it is important to conduct a market-based competitor analysis as well.

3.2.3 Market-based Competitor Analysis Displays Competitive Landscape

When considering potential entry into a market, entrepreneurs tend to focus on their own strengths, weaknesses, and capabilities at the expense of competitive considerations. Wise entry decisions, however, should involve a thorough overview of existing and potential competitors together along with the market capacity (Moore et al., 2007). Contrary to the prescriptions of strategic management theory, research findings reveal that entrepreneurs who decide to start a business regularly mention factors internal to themselves or their businesses,

but there is little to no consideration of the external factors such as existing competitors (Moore et al., 2007; 441). At the same time, it has been proven that if entrepreneurs are trained to avoid only self-focus and shift towards a serious consideration of present or potential competition, they may make better entry decisions. An entrepreneur should have a deep understanding of the competition in order to assess if the industry is an attractive one to enter as well as to choose a competitive position within the industry (Moore et al., 2007; 451).

In order to assess the competition, we have followed the theory of Michael E. Porter (1980) in Porter's Wheel of Competitive Strategy and the Components of a Competitor Analysis. There are four diagnostic components to a competitor analysis: future goals (or objectives), current strategy, assumptions, and resources and capabilities. These four components allow us to form a competitor's response profile (Porter, 1980; 49). A comparison chart of the main competitors can be found in Table 6, and detailed descriptions can be found in Appendix D.

Company	Praqo	ScriptT Systems LLC	Greyfade Media	Square Box Systems LTD	Production/Post-production Companies	XX	Drylab R&D	Red Giant
Country of Origin	Norway	US	US	UK	International	International	Norway	US
Product name	**Praqo Logging System**	**ScriptE**	**QRSlate**	**CatDV**	**Traditional logging by Editor's assistant**	**Clapperboard Apps***	**Dailies Viewer**	**Plural Eyes**
Price	15NOK per logged clip	NOK 3500,00	NOK 0,00 (Requires QR Slate Desktop Importer 294,00 NOK)	NOK 2650,00	NOK 1560,00	from NOK 0,00 to NOK 150,00	NOK 490,00	NOK 1155,00
Future goals	Synchronization of audio, video and script log	Digital script supervising	Organization of media with QR codes	Multimedia tools; Technical consultancy	Sustaining the position	Further development of clapperboard functions	Dailies creation and distribution	Software for motion design, photography and color correction.
Current strategy	Development of prototype	Incremental improvements of the existing product	Incremental improvements	Incremental changes on existing technology	Synchronization; Note Writing: Organizing files into folders	Incremental improvements	Incremental changes of the existing technology	Incremental changes on existing technology
Assumptions	Covers all areas of expertise offered by competitors separately.	Will continue with incremental changes.	Will continue with qr codes automatic organization of media. Probably will move to identification of sounds.	Will continue with incremental improvements on two categories of products (Standalone & Networked)	Film post-production heads towards digitalization and thus, the replacement of Logger with new technical solutions seems unavoidable.	Will continue with adding new features	Will continue to specialize in dailies.	Will continue with incremental changes.

Capabilities: Strengths	Covers three areas of expertise: script log software app, video management software, synchronization methods.	Already existing group of customers; Well-developed script log; Product used by script supervisors; Community built around product	Linking the identified video clips with notes.	A robust CatDV server solutions; Improving on existing products constantly; A great number of partners; Website in 4 Languages.	This is the logging method in use right now in all feature film productions all over the world.	Easier and cheaper to use than traditional hardware clapperboards.	Already used by Norwegian film directors and proved successful.	Already used by Norwegian post-production.
Capabilities: Weaknesses	Currently in development and thus has not been tested yet. Functions to be proved.	Does not transfer data into the editing system.	It does not synchronize audio and video automatically.	It takes significant amount of time for data to transfer.	Significant cost; Long time frame	Limited number of features including mere flashing of the screen, sending the signal and displaying text.	It covers only one area of expertise of Praqo Logging System.	It deals only with audio synchronization from different sources.
Products and Platforms	FB; Forum; Blog	FB; Blog	FB; Twitter; YouTube	---	---	---	Blog	FB
Training and Customer Service	Online Instructional Videos; FAQ; Online Guide	Live trainings in NY & LA, User Guide Online; Online Instructional Video & Full Training; Blog; Community	Online instructional video; Digital Assistant on YouTube	Free trial available for download; 30 day free support by email; Video Tutorials; FAQ site, Feedback & Mailing Lists; CatDV Survey	---	---	Video about Dailies Viewer at Vimeo	FAQ; Online Tutorials; Online support; Community

* Clapperboard Apps: 1. Digital Clapperboard; 2. Professional Digital Clapperboard; 3. Take One – Movie Clapperboard; 4. TIZA DSLR Slate® 20/20 Clapperboard; 5. MovieSlate® (Clapperboard & Shot Log); 6. DRSL Slate; 7. Clapperboard/Clapboard Slate; 8. MovieBoard – Clapperboard; 9. Professional ClapperBoard; 10. T-Kachinko; 11. SyncSlate Professional Clapperboard; 12. No Budget Slate; 13. 3D Slate.

Table 6: Competitor Analysis Chart

As mentioned in the technical study, although competitors in dailies management are plentiful, the biggest reason that most of them cannot flourish within the market seems to be lack of technical prowess. Now, the most important factor will be to reach the market with a working product before a competitor finally improves their own. It is perhaps summed up best by Norman Hollyn, a former Hollywood editor and American post-production expert:

> *"Of course the system sounds desirable but, like everything, the devil is in the details. There are many companies that are creating on-set dailies systems, and all of them promise the same thing that yours does. But then crews find them difficult to integrate, or they don't rapidly provide on-set transcoding, or they work except when there is moisture in the air, or... or... or... So I have no idea if this system is desirable. But the idea... is absolutely desirable."*

Judging by our examination of the Norwegian and United States film industries and the competition operating therein, it is advisable that Praqo move forward with these markets. Both are showing need, growth, and neither has found a working solution to this problem of dailies management. The next step is to determine exactly how Praqo should go about taking on these markets.

3.3. Market Strategy for Introducing the Praqo Logging System

Now that it has been determined that the Norwegian and United States markets are suitable for entry, it must be further determined who within those markets is the best fit for the Praqo Logging System. This includes a strategy for market-entry based on the innovation-type of the product, as well as a specific identification of various market segments and which would make the most appropriate target market. Part of this is going beyond identification of the utilities for the end-user and determining who is the actual purchaser of the product, and the specific economic value of the Praqo Logging System to that person. Finally, we will examine the internal and external benefits and drawbacks of the product in order to prepare for possible consequences that may result.

3.3.1 Options for Market Entry for the Praqo Logging System

The possibility of the Praqo Logging System as a disruptive innovation was examined in the technical study, and will prove to have many ramifications on the development and marketing of Praqo to the world. However, in order to support our theory and explore the options further, we should also consider what Praqo would look like if it were to be marketed

as a sustaining innovation. Therefore, this section will examine both the possibility of Praqo as a sustaining innovation and as a potential disruptive innovation, and what this would mean for the future of Praqo.

The following model by Walsh and Kirchhoff (from Walsh et al's 2008 article) in Figure 6 will serve as a guide in the exploration of a marketing strategy under sustaining and potentially disruptive scenarios. The five categories of commercialization of an innovation are Technology Source, Technology Focus, Innovation Type, Market Strategies, and User Application Type. We will explain each category in turn.

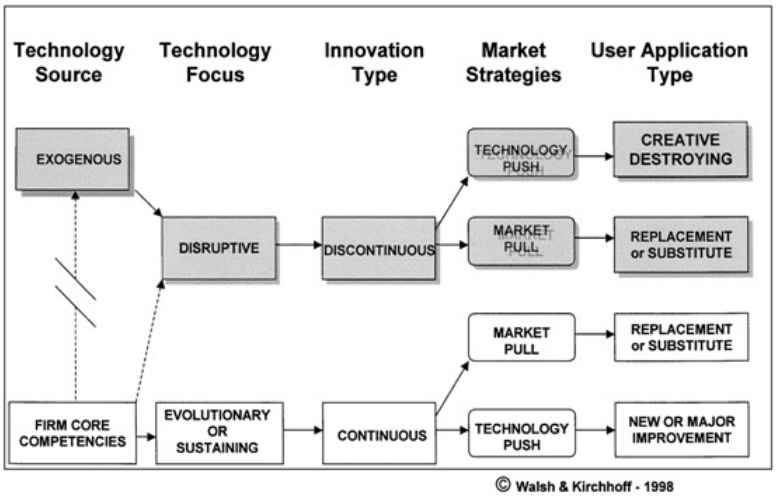


Figure 6: Disruptive Technology Innovation Model

There are two options when it comes to the ‘technology source’ of innovations, according to the Walsh and Kirchhoff (1998) model: exogenous and firm core competencies. They go on to say that technologies that 'originate inside (an industry) are said to be based upon 'core competencies' of corporations in the industry.' Therefore, most sustaining innovations tend to come from within an industry, and compete with potentially disruptive innovations from outside an industry. These disruptive innovations often go on to create new industries.

A suggestion made by Bower and Christensen (1995) is that potentially disruptive innovations work best when they originate from new firms. Even in the case of potentially disruptive innovations that come from the R&D of an established firm, according to Bower and Christensen the established firm should create a spinoff company to launch the potentially disruptive innovation. Established firms that pursue a potentially disruptive innovation can

sometimes find it challenging to compete with their already existing innovations, as it can be a conflict of interest (Walsh et al 2008).

When it comes to the ‘technology focus’ portion of the model, sustaining technologies build incrementally upon already existing and proven technologies. Potentially disruptive technologies may not be entirely new from a technical point of view, but have superior 'performance trajectories along critical dimensions that customers value', according to Bower and Christensen (1995). Potentially disruptive innovations create new demand in new markets while destroying existing markets based on old technology (Walsh et al, 2008). They key to convincing potential customers of a potentially disruptive technology's worth is displaying a significant cost reduction and/or performance improvements upon the existing product.

Quite simply, the ‘innovation type’ portion of the model transfers the terminology of a technology into an innovation, which implies the commercialization aspect of the process. Technology is very interesting on a scientific level, but if it can't be translated into something with user utility, it is useless as a commercialized product. When it comes to sustaining technologies, these are transferred into what Walsh et al (2008) refer to as continuous innovations, as disruptive technologies are translated into discontinuous/disruptive innovations.

There are two options for sustaining technologies in the ‘market strategies’ portion of the model: market pull and technology push. A company which produces a sustaining innovation is assumed to have a pre-established customer base. Those companies are usually reacting to market pull. This is very typical of a sustaining innovation, as they are often driven by customer demand. Companies with a pre-established customer base only need to give their customers what they ask for to remain profitable. These new products must be, by their nature, replacements or substitutes for the original product. Technology push is essentially 'pushing' new technology on the market, regardless of the perceived need of consumers. In fact, consumers often don't realize they have a need for a product until it is introduced. This technique is not usually recommended for sustaining innovations, as it may cause companies to compete with their own products.

The same two options of market pull and technology push are available to potentially disruptive innovations. Promoting a potentially disruptive innovation with a technology push strategy might be the most difficult strategy mix of all. Marketing efforts are risky, expensive, and subject to high rates of failure as new companies try to convince resistant customers of

the potential for their products. This strategy requires a long sales effort with few early adopters (Walsh et al 2008).

A safer approach to marketing a potentially disruptive innovation that requires fewer costs, fewer risks, and less failure potential is utilizing a market pull strategy. By gathering information on customer needs, new companies can then adapt their technology to those needs (Walsh et al 2008). This strategy should include attracting less desirable customers on the fringes of the customer base, or attracting an entirely new customer base that is completely un-served by existing technology. Established companies that are serving the desirable customer base will not miss the less desirable customers, and may not even notice they are gone for a while. Over time, when the needs of one of these alternative customer groups are met and the customer base begins to build, it will attract the attention of more traditionally desirable customers for the technology. At this point, the new technology should be in use for some time by one of the alternative customer bases, and it will no longer be an untested, unproven risk (Raymond 2010).

Praqo Enters the Market as a Sustaining Innovation

Although the founders of Praqo have all worked in the creative industries to some extent, with some directly involved in the film and post-production industries, it would be a stretch to say that the Praqo Logging System comes from within the industry. The company itself is pre start-up; therefore by definition it does not exist and cannot have core competencies or a pre-established customer base to build upon.

In the case of the Praqo Logging System, there is an argument that can be made for the technology as a sustaining technology. In a sense, it can be said that since Praqo makes the already established process of organizing and synchronizing data easier for those who perform these tasks by automating the system rather than by performing it manually, it is only an incremental improvement. It is only when you lift the veil and see how much the processes are changed by the new technology that an argument is formed for potential disruption.

Market pull, the strategy usually suggested for pre-established companies, will not work for Praqo. It is a pre-startup with no established customers. While they may be able to develop a product that serves as a replacement or substitute for an existing product made by another company, an incremental benefit will almost never convince a customer to change

brands. Therefore, we cannot recommend that Praqo take this course of action due to their lack of a customer base, and the difficulty in convincing new customers to switch.

Praqo Enters the Market as a Potentially Disruptive Innovation

This is the path that we recommend for Praqo, rather than the path of a sustaining innovation as previously described. It is a new, independent company, and research is proving that these companies which take on discontinuous innovation handle the challenges much more successfully than established companies or spinoffs. An argument can also be made for the Praqo Logging System as a potentially disruptive technology. It is a serious technical advancement for this part of the post-production process, and introduces an entirely new infrastructure to digital dailies management. Aside from its technical superiority, the software also drastically saves users time.

In the case of Praqo, we believe that market pull is the most effective path for the Praqo Logging System as a potentially disruptive innovation. In order to utilize this technique, Praqo needs to identify either the less desirable customers of their competitors, or a segment that their competitors are not serving. Then Praqo can examine what the needs are of these alternative groups, and how they can go about meeting those needs. We recommend that they focus on the Norwegian film and television industry to begin, as it is also a market in which major global players will not necessarily have an immediate interest. Furthermore, when it comes time to enter the United States market, we suggest they put a focus on independent film companies, rather than the more desirable major companies or 'Big Six' studios.

The next step in preparation for commercialization will be to break the film and television industry down by using market segmentation. This will help to specify whether or not we can utilize the disruptive strategy further when marketing the Praqo Logging System to specific customer groups.

3.3.2 Market Segmentation of Potential Customer Base

There are several customer groups within the Norwegian film market that may be interested in utilizing the Praqo Logging System for a variety of reasons. These include several categories that we have labeled as Production Companies, Post-Production Houses, Studios, Freelance Editors, Film Schools, and Other (private filmmakers, student filmmakers, etc).

When it comes to principle filming, this part of the process is run by a production company, which is usually owned by one or more producers. This producer is typically the only full time employee of the production company - everyone else works in a freelance position. The producer is also in charge of all financial aspects of the production, and will be the person in charge of allocating money toward the Praqo Logging System. This makes him the most important decision maker in principle filming, and the person with the most to gain or lose. Production companies create content for films, television programs, and commercials.

A post-production house is a separate entity from a production company, but the two often work in conjunction by specializing in their own fields. A post-production house turns the raw footage from principle filming into the polished final product that audiences are familiar with in modern times, and is usually hired by a production company to work on a film project. The title of the person in charge of post-production can vary, as sometimes it is the supervising editor, sometimes the editor, and sometimes a chief technical officer. This will come down to the structure of each individual business. Post-production houses typically do post-production work on films, television programs, and commercials. Although post-production houses will not make decisions that affect how spending is done on a film project (it is the producer from the production company that is in charge of this spending, and he controls every element from beginning to end), we have included them into our segmentation because they are, typically, the end-users of Praqo Logging System.

Although funding for the Praqo Logging System will usually come from the producer of a film, it is necessary to have a decision-maker on board in the post-production house as well. Post-production has much gain in terms of time savings by using the Praqo Logging System, and someone there must approve of its use. It will be easier convince a producer of the value of the product with the help of someone in post-production. In fact, according to American post-production expert Norman Hollyn:

> *"In general, producers don't get involved at this level of granularity unless someone brings it up to them - this might be an editor, a director of photography, or they might have seen it at a tradeshow like the National Association of Broadcaster's Show. This would normally come from the editor or the digital imaging technician."*

Studios are companies that typically encompass all aspects of the filmmaking process, including tasks such as pre-production, principle filming, post-production, and distribution. For the purposes of the Praqo Logging System, they can be considered a single company

running both the production and post-production elements. These companies are usually heavy-hitters in their industry, and can handle all aspects of film, television programs, and commercials. As with production companies and post-production houses, both decision-makers from production and post-production need to be involved in the decision-making process.

Production companies and post-production houses will often staff their editorial teams with freelance editors. Some freelance editors may eventually sign on with a post-production house and work there full time, but many continue to work freelance, as is the nature of the business. Since an editor can be a decision-maker in his own right, or may go on to be a decision-maker at a post-production house, they are also targets for the Praqo Logging System.

It is of extreme importance that Praqo develops a relationship with film schools in markets of entry and introduces the Praqo Logging System into the routine of daily courses. In this way, not only do students get the benefit of the system which translates into quicker dailies management and potentially better art, but they graduate from these schools trained in the ways of the Praqo Logging System. It will be difficult for these students to be comfortable with resorting to manual dailies management once they have experienced the ease and convenience of Praqo.

The final category in our target market segmentation is the category of 'Other.' This can encompass student filmmakers (those in programs outside of the film schools, such as Visual Anthropology in Tromsø), private individual filmmakers, specialty filmmakers such as indigenous filmmakers, and any other small filmmaker. One of the benefits of the Praqo Logging System is that since it is based on per-synchronization pricing, it ends up being priced to scale. This means that companies which require large amounts of dailies management per year will pay a higher price, and those who may only need to synchronize one short film will pay much less. This makes it affordable and accessible to individuals who otherwise would not be able to afford such advanced software. This technology may help such groups to find a voice where they otherwise may not have had one.

A summary of these market segments along with their potential decision-makers and end-users can be found in Table 7.

	Potential Customers	Collaboration	Decision Maker	Support to Decision Maker	End-Users
Target Market	**Production Companies**	With post-production houses or freelance editors	Producer	Line Producer, Director, and/or Editor	Script Supervisor & 2nd Assistant Cameraperson
	Post-Production Houses	With production companies and/or freelance editors	Producer	Editor, Digital Imaging Technician, and/or Editor's Assistant	Digital Imaging Technician & Editor's Assistant
	Studios	Freelance Editors	Producer	Line Producer, Director, Editor, Digital Imaging Technician, and/or Editor's Assistant	Script Supervisor, 2nd Assistant Cameraperson, Digital Imaging Technician, & Editor's Assistant
	Freelance Editors	With production companies, post-production houses, or studios	Himself, with input from collaborator	XX	Himself
	Film Schools	None, operates independently	School Administration	XX	Students
	Other (Student groups, individual filmmakers, etc)	Misc	Misc	Misc	Misc

Table 7: Customers, Decision Makers, and End Users of the Praqo Logging System

Due to the prevalence and similar operational structure of production companies, post-production houses, and studios, we have decided to focus on these as our target market. Freelance editors can also be considered a part of this mix, since they are largely employed by post-production houses and studios. It is important to note, however, that most of these companies are usually differentiated into two categories: major film companies, and independent film companies. We recommend that Praqo pursue the independent film companies to keep in line with their potentially disruptive strategy.

Film schools do remain of interest to Praqo, but since the intention is to offer the Praqo Logging System to these schools for free, we cannot consider them as a potential revenue source. Furthermore, those that we have put into the 'other' category encompass a group with too many question marks due to the individualized nature of their filmmaking.

Although Praqo does want to be accessible to these people as well, it is not a group that merits targeting at the moment.

Each of our target companies has a bottom line, however, and it will always be helpful to show their decision-makers that not only can the Praqo Logging System make their production more efficient, but it can save them money as well. An examination of the economic value of the Logging System can be found in the next section.

3.3.3 The Economic Value of Praqo to Buyers

There are two ways in which the Praqo can help save money for its customers. The first is through limiting mistakes that may (A) require cast and crew to be flown back to a shooting location to re-shoot a scene, or (B) result in a poorer quality film that may attract a smaller audience, translating into lost box office revenues. This is the greatest financial value that the Logging System has, especially to producers who are in charge of financial distribution. However, this is difficult to put into specific financial terms. We cannot suggest that the Praqo Logging System will save its customers a certain percentage in money this way, as this will happen largely on a case-by-case basis.

However, the Praqo Logging System can save productions at least a measurable amount of money in another way, although this amount is not much compared to the total costs of making a film. The traditional way to manage dailies has involved hiring an editor's assistant on a freelance basis. This person performs the dailies management functions manually, and is paid per work day or per work hour. By utilizing the Praqo Logging System, the position of the editor's assistant has the potential to be reduced or entirely eliminated.

Although there are a variety of functions associated with dailies management, the synchronization of the video files, audio files, and script log files is the most labor-intensive and time-consuming. According to the idea providers, an editor's assistant uses 5,4 minutes to synchronize one clip. It is estimated that in a standard work day of 7,4-8 hours, the editor's assistant can synchronize around 80 clips. The average movie is estimated to run about 1,5 hours which requires about 18 days of filming, and 1 500 clips synchronized. This also means that an editor's assistant will be paid for a minimum of 18 work days on a feature film, but some feature films take as long as 45 days to film.

The wages of an editor's assistant will vary between Norway and the U.S., due to the higher cost of living in Norway. While the average rate of pay for this position is 1 500 NOK

per work day in Norway (social insurance included), it is about 770 NOK (or $130) per work day in the U.S. In addition to the cost of the manual labor, the editor's assistant also requires an editing suite in which to manage the dailies. While an editor has his own editing suite, the editor's assistant must rent one on a day-to-day basis. This costs approximately 400 NOK or more every day in addition to his salary, and is about the same in Norway as in the U.S. In total, this means that it costs between 35 000 and 88 000 NOK for a Norwegian editor's assistant to manage the dailies for each feature film, and about 21 000 to 53 000 in the U.S.

The Praqo Logging System is intended to function as a SaaS (software as a service), in which the software is free but customers pay for the logging service per synchronized clip. This model for providing logging services has not yet been attempted in the industry thus far. With the Praqo Logging System, one synchronization will cost 15 NOK in Norway, which means that the average feature film (at 1 500 synchronizations per feature film) will cost 22 500 NOK as opposed to the 35 280 NOK it would cost for traditional manual logging. This reduces costs of the logging by 36-37%,. In the U.S., one synchronization will cost 6 NOK, making the average feature film 9 000 NOK to synchronize as opposed to the 20 900 NOK it costs for an editor's assistant to perform the job. This reduces the costs of logging by 57-58%, as seen in Table 8.

Manual vs Software	**Number of Work Days (7,4-8 hrs)**	**Number of Clips Synchronized**	**Salary or Cost (NOK)**	**Editing Suite Rental (NOK)**	**Total Cost (NOK)**	**Savings (NOK)**
Editor's Assistant Norway	18	1 500	28 000	7 000	35 000	12 500
Praqo Logging System Norway	Minutes per Day	1 500	22 500	XX	**22 500**	**36%**
Editor's Assistant U.S.	18	1 500	13 900	7 000	20 900	11 900
Praqo Logging System U.S.	Minutes per Day	1 500	9 000	XX	**9 000**	**57%**
Editor's Assistant Norway	45	3 700	70 000	18 000	88 000	32 500
Praqo Logging System Norway	Minutes per Day	3 700	55 500	XX	**55 500**	**37%**
Editor's Assistant U.S.	45	3 700	34 600	18 000	52 600	30 400
Praqo Logging System U.S.	Minutes per Day	3 700	22 200	XX	**22 200**	**58%**

Table 8: Costs of Praqo Logging System vs. Assistant Editor

In fact, the costs of the overall production are lowered even more as with the Praqo Logging System there is no need to purchase a script log writing program (approximately 3500 NOK traditionally, free with Praqo), a hardware clapperboard (up to 10 000 NOK traditionally, free digital app with Praqo), or a dailies creator and dailies distribution program (around 900 NOK traditionally, free with Praqo). Praqo customers only pay for the synchronization of their files. Praqo will embrace all these functionalities so the costs associated with purchasing the aforementioned programs and equipment will be significantly reduced by at least 14 400 NOK for the customer.

The financial value of the Praqo Logging System is also strong in other ways as well. The system ensures repeat business, as the customer must pay each time they wish to have files synchronized, which must be done for every film and television show aired. Payment will typically be arranged at the time of order. The number of customers that Praqo will be able to handle at one time is essentially limitless - the company only requires enhanced server capabilities for larger quantities of synchronizations, and this can be obtained through online server providers such as Amazon Cloud Services or IBM Business Server.

Now that we have determined which markets Praqo will serve, which customers to target in those markets, along with the financial viability of the product, it is important to try to predict not only the internal and external elements that can help to propel the product forward, but those elements that may hold it back. One of the more efficient ways to determine these factors is through a SWOT analysis, which can be found in the next section.

3.3.4 SWOT Analysis Clarifies Favorable and Unfavorable Factors

A SWOT analysis is generally used in order to evaluate favorable and unfavorable factors that affect a company or product internally and externally. It is another important tool when measuring the viability of a product or company. SWOT stands for Strengths, Weaknesses, Opportunities, and Threats. In Table 9 you will find a SWOT analysis for Praqo and the Praqo Logging System. A more detailed description of this analysis can be found in Appendix E.

	Helpful To Achieving Objectives	Harmful to Achieving Objectives
	Strengths	**Weaknesses**
Internal factors	1. Offers a variety of functions that other systems do not 2. Reduces costs of the logging process by half 3. Reduces time of manual labor 4. Patent Pending 5. Pre-existing relationships with film companies 6. Knowledgeable human capital	1. Still in development stage, no concrete data to support claims 2. Currently no plans for file protection and no possibility of encryption
	Opportunities	**Threats**
External Factors	1. This sort of technology is requested and desired by the industry 2. Can eliminate a redundant, low-level position 3. Move towards cost savings and in-house post-production	1. Recession affecting overall industry 2. Competitors may attempt to circumvent patent 3. Competition is high and technologies are advanced 4. May face human resistance to change 5. A constantly changing market with no standardization

Table 9: Praqo SWOT Analysis

Praqo can use their strengths in order to solidify their place in the Norwegian markets before moving into the U.S., and best capitalize on available opportunities. The Logging System offers something that no one else currently offers, and it is important to use that to gain legitimacy within the pre-established network that Praqo enjoys in the Norwegian market. Industry leaders are already interested in a service that offers what Praqo offers, so they must focus on providing a reliable product at a cost-savings to the customers. It also helps that the founders are Norwegian, and not only are they familiar with the technical aspects of the film and television industry, but with software development as well. This is a huge advantage.

There are certainly concerns that Praqo should have in regards to internal and external factors, but most of these may be addressed by hyper-awareness of their potential results and a diligence in overcoming them. Their weaknesses can be addressed by being as aggressive as

possible in product development. Recession is listed as a threat, but it may also be seen as an opportunity as the Logging System helps companies to save money. In regards to competition, Praqo must maintain a focus on staying as technologically driven as possible, especially in an industry as fast-moving as the film and television industry. Human resistance to change may be the biggest threat, but Praqo can overcome this to some extent by including end-users in the decision-making process by offering free trials to them as well as the decision-makers. Finally, the market is constantly changing with no standardization, but hopefully Praqo can lead the way in introducing standardized measures to the industry, which by all accounts is what people actually want.

3.4. Conclusion

Throughout this chapter, we have performed a market analysis and developed a market strategy for the Praqo Logging System. The market analysis has proven that the Norwegian and United States film industries are both in a position to provide sales for the Logging System, with little in the way of working competition. In addition, due to the careful consideration put into the development of the market strategy, Praqo is now in a more educated position to enter the market based upon solid research.

It is now possible to use the combined information from the technical study research along with the market study research in order to develop a working business plan for the Praqo Logging System. The business plan should be able to operate as an independent document, and therefore may repeat some of the information found in this and the previous chapters, but in a more succinct manner. Without the background knowledge uncovered in the technical and market studies, it would have been impossible to come up with a business plan as based in research and reality as the one we are now able to develop. The business plan can be found in the following chapter.

4. Business Plan

4.1. Executive Summary

Imagine that you are a film producer at a major film studio. You've been struggling to get your latest project off the ground, and while you believe in its potential, your investors are a little uncertain. But finally you scrape together enough money to have the film made, promising your investors everything but your first-born child in return. You can't be physically on-set every day, but fortunately you can view raw footage from each day's filming, also known as 'digital dailies.' This is the typical way in the television and film industries for a producer to be sure that everything is going according to plan - and fix it if it's not.

But there's a problem. Assembling digital dailies is a manual process that takes hours to complete. Sometimes you can't view them until two, or even three days later. By then, the sets have been torn down and the actors are off to their next shooting location. There are some really simple adjustments you would have made to the story as it progressed, had you actually been able to view the footage in time. But now you are left with a choice: fly the actors back in to reshoot and go even further over budget, or hope the audience doesn't notice that your story doesn't exactly make sense. Either way, your investors won't be happy.

This scenario is all too common in the filmmaking world. Digital dailies are supposed to act as a safety net for filming, a way to identify and fix problems early in the process. But instead, they usually end up becoming a bottleneck in the flow of creativity and revenue-building for every film and television production company or studio in the world. Various software companies have attempted to create a solution that would rectify this problem, but they have always fallen short. Until now.

The Praqo Logging System is a new process that automates the assembly of digital dailies, taking only minutes a day rather than many grueling hours. This allows producers to view film footage sooner and address mistakes in a timely fashion, ultimately saving the production money. Rather than being sold as a one-time software package, it operates on a unique pay-per-synchronization basis that keeps producers coming back to assemble digital dailies each time they produce a film, creating recurring revenue.

Praqo has been put in a unique position to succeed in these endeavors, and the time is right now. Digitalization is firmly taking hold in media worldwide, and automated solutions are the way of the future. It is only a matter of time until one company brings a working solution to the market, and Praqo wants to be that company. Our system has been deemed patent-worthy by the patent attorneys at Onsagers, and is currently under review for patent protection in Norway. In addition, we already have companies such as the national television broadcaster NRK interested in becoming involved through beta-testing. And all of this is backed up by a highly qualified team of industry professionals, sales and marketing experts, and extremely talented software developers.

We intend to build our credibility under the radar in the Norwegian film and television industry before entering the U.S. market. The market for digital dailies management is estimated to be worth 13.4 million NOK in Norway, and we anticipate reaching 40% of that market by year five of commercialization. The dailies management market in the U.S. is estimated to be worth 256.6 million NOK, and we estimate penetrating 7% of that market by year five of commercialization.

Sales will have a slow start in year one, as the company takes time to build a customer base and prove its legitimacy through the Norwegian market. Our first sale is expected to be in July of 2014, and our entrance into the U.S. market will follow in July of 2015. Sales are expected to grow and continue on an upwards trajectory, and in 2017 (year 3) we will become cash-flow positive.

In order to maintain a positive cash balance in years one and two, we will require an investment of 1.8 million NOK in July of 2014. We are willing to exchange up to 10% of the company for this investment.

4.2. Infrastructure of the Business

4.2.1 Mission Statement

Praqo AS is a software development company committed to providing post-production solutions to the film and television industry in order to streamline processes and create higher-quality art, which in turn helps to produce higher grossing films in the box office.

4.2.2 Vision Statement

We aim to become a worldwide brand name in post-production software, tapping into every major film and television market on the planet. We plan to begin by reaching 7% of the U.S. television and film market by year 5 of commercialization.

4.2.3 The Current Status of Praqo AS

Praqo AS is a limited company based in Tromsø, Norway that is developing a cloud-based software system that is meant to aid in certain aspects of post-production, specifically the automatic synchronization of film script logs, audio files, and video files into 'digital dailies.' This software is currently known as the Praqo Logging System.

Praqo was founded immediately after winning the regional Venture Cup of Norway in April of 2012, a prestigious competition for aspiring entrepreneurs initiated by McKinsey & Company. Praqo has obtained 1.2 million NOK in development grants from Introfondet, Innovation Norway, and the Northern Research Institute (NORUT). At present, Praqo is developing a prototype of the Logging System in cooperation with NORUT. In addition, the company has signed an incubation agreement with Norinnova Technology Transfer (NTT) for guidance in business development.

4.2.4 Ownership

Praqo AS was established by three founders: Jannik Kehlet (film and television industry professional), Benjamin Kehlet (software development), and Anders Bakken (software development). Ownership of Praqo AS will belong to three parties: the Management Team, Norinnova Technology Transfer, and potential investors.

4.2.5 Company Organization & the Management Team

Praqo AS will be organized into three teams: administrative led by Jannik Kehlet, sales and marketing led by Jessica Green, and software development led by Benjamin Kehlet and Anders Bakken.

Chief Executive Officer (CEO): Jannik Kehlet. J. Kehlet is one of the founders of the Praqo Logging System, and will lead the company in business development as CEO. He has been educated in film production from the Nordland Art and Film school in Kabelvåg, and has professional experience within the film and television industry. Some of this experience

includes roles as a cinematographer in film productions such as Forvetninger (2009) and *Et kjærlighetskapittel* (2008), as a lighting technician in *Kautokeino-opprøret* (2008), and an assistant camera person in *Næste skridt* (2007).

Chief Sales & Marketing Officer (CSMO): Jessica Green. Ms Green is a research partner for Praqo AS and has education in Broadcast and Cinematic Arts (B.A.A.) as well as Business Creation and Entrepreneurship (M.Sc.). Green also has practical experience in media sales as a sales executive at CBS Radio, where it was also common to find her providing voice talent and writing advertising scripts. She has previously worked in management at Macy's Department Stores, as a project manager in marketing at Diana Rua Media, and in business development at Bazinga Bar in Tromsø, Norway.

Senior Software Developers: Benjamin Kehlet and Anders Bakken. B. Kehlet and Bakken are also founding members of Praqo AS, and have worked on the Logging System from a software development perspective. B. Kehlet is currently finishing a Ph.D. in Informatics at the University of Oslo, while Bakken is a senior software developer working at Netflix in California. They will serve as part-time senior software developers and will lead the software development team.

Board Members. Praqo board members currently consist of founders Jannik Kehlet and Benjamin Kehlet.

4.2.6 Intellectual Property

The Praqo Logging System technology has been deemed patent-worthy by Onsagers patent attorneys, and a patent application within Norway has been filed with an option to extend that patent into the U.S. This will assist Praqo in maintaining security over their invention.

4.3. The Praqo Logging System and the Problem It Solves

4.3.1 Introduction

The Praqo Logging System has been developed in order to make certain parts of the post-production process in the creation of films and television programs easier and faster. It specifically relates to the process of digital dailies management, which has traditionally been performed manually by an entry-level employee. With the Praqo Logging System, the process

takes only a matter of minutes a day. The product consists of no hardware or physical components - all of its functionalities are designed as software and as a service.

4.3.2 Traditional Dailies Management

Each day on the set of a film or television show, the producer and other key staff members view footage called 'dailies' in order to determine whether a scene is acceptable or needs to be filmed again. Dailies consist of the synchronization of three types of files: video files, audio files, and script log files. Video files require the visual cue of a clapperboard closing in the beginning of each scene, as audio files rely upon the audible sound of the clapperboard closing in the beginning of each scene. This is in order to pair the audio files based on the audible 'clap' with the video files based on the visual closing of the clapperboard. Finally, a script log is kept by a script supervisor, and is typically managed in an Excel file. This is maintained in order to keep track of continuity from scene to scene.

As the name implies, dailies are created and viewed every day of principle filming. When the individual files are ready, they must first be backed-up, organized, synchronized, and transcoded. Later, the dailies will be distributed to key staff for viewing and added to the editing system for editing. It is the responsibility of an editor's assistant to complete these processes, with the help of a digital imaging technician. However, while a digital imaging technician has many other high-tech responsibilities on-set, dailies management is the *only* responsibility of an editor's assistant and takes him an entire work day for each day of filming. This means that if filming wraps on a Monday evening, dailies are not ready to be viewed until Tuesday evening, and so forth. A figure showing these processes can be found in Appendix F.

4.3.3 Dailies Management with the Praqo Logging System

The Praqo Logging System allows all of these processes to be completed automatically utilizing cloud computing. A cloud is a complex infrastructure in which data can be stored and manipulated over a network, typically the internet. In this case, all of the files that need to be assembled will be compressed and uploaded into the cloud. Once in the cloud, Praqo employees will be the only individuals who have access to the material.

The Logging System will consist of four components, found in Table 10.

Component	Functionalities
Digital Clapperboard App	Praqo has developed a digital clapperboard app that can be downloaded for free onto any basic tablet, such as an iPad. This app gives the tablet the functionalities of a clapperboard, with the addition of assigning a special QR code to each file, allowing it to be matched later with the corresponding audio files and script log.
Script Log Program	A program is being developed by Praqo to replace the typical Excel document used today to manage a script log. This new program will also assign a special QR code to each scene of the script log to aid in matching these with the video and audio files. This program will also be downloaded for free.
Synchronization Application within the Cloud	The application that will perform the backups, transcoding, organization, and synchronization of the video, audio, and script log files will be located within a digital cloud. These files will be compressed and uploaded into the cloud. When they are complete, they will be distributed to the requested staff and added to the editing system by the cloud technology. Customers will pay for this service on a per-synchronization basis at 15 NOK per synchronization in Norway and 6 NOK per synchronization in the U.S.
Web Server	The web server will allow for payment to be arranged online at the time of upload, store the individual files as backups, and make the material available for viewing online from anywhere in the world for up to a year. This saves time and money as opposed to physically delivering DVDs or hard drives filled with material.

Table 10: Praqo Logging System Components

By utilizing the Praqo Logging System, digital dailies will be assembled through the automated system rather than manually by an employee. A figure showing these processes can be found in Appendix G. This will take minutes a day rather than hours. For instance, if filming is completed on a Monday evening, it should be possible for dailies to be viewed later that same evening or early the next morning. This allows the producer to view footage as close as possible to the time of shooting, so corrections can be easily made if needed.

Praqo will provide simple but useful training instructions on the Praqo Logging System and how it works. This might take the form of a short tutorial video as well as a 'Frequently Asked Questions' section. However, the elements of the program are expected to be so simple that little training will be necessary. In addition, Praqo will provide customer service in order to assist end-users with any questions or problems they might face while using the Logging System. Customer service will also be a means of obtaining very valuable feedback from customers that will allow Praqo to develop the product further in order to meet the specific needs and expectations of the buyers.

Praqo will create an arena for community interaction and discussion in the form of a forum linked to the website. Here the end-users will be able to communicate with one another, share experiences related to the usage of Praqo, as well as a variety of post-production topics and interests. This could be well-received, due to the nature of the film-industry and its emphasis on local and global communities. It may be also linked to other social media such as Facebook or Twitter.

4.4. The Value Proposition that Drives the Innovation

Praqo AS offers many benefits to the film and television industry that will result in quicker decision making, better time management, and increased standardization of post-production processes.

- **Quicker Decision-Making leads to Higher Quality Filmmaking.** To begin, the Praqo Logging System will allow producers to make decisions on the viability of previously shot footage much quicker, using higher quality video and sound than some competing systems. In this way, the direction of the artistic vision of the producer can be refined and improved as principle filming progresses based on more detailed viewings of digital dailies created in a timely manner, translating to higher-quality films and increased box-office revenues.

- **Obtain More Productivity from Employees, or Eliminate the Redundant.** The Praqo Logging System also introduces to the post-production industry the ability to liberate the time of those who previously spent entire workdays on digital dailies management. This means those positions can be eliminated, reduced, or given new responsibilities of a more challenging nature, which saves money in salaries and significantly reduces the hours previously spent wasted on tedious, manual responsibilities. Cost savings obtained by the possibility of eliminating or reducing the position of the editor's assistant can be found in Appendix H.

- **Quicker Integration of Freelance Employees.** The introduction of the Logging System also allows for quicker integration of new freelance employees to various processes in the production and post-production industry, as the Praqo Logging System introduces a certain level of standardization among dailies management and report management, such as the Praqo Script Log Program. This means that less time is spent on training constantly

revolving employees, and less ambiguity when one employee is trying to understand the processes of another.

4.5. Market Analysis of the Norwegian and U.S. Film Industries

4.5.1 Norwegian Market Analysis

Praqo AS will be operating primarily in the business-to-business market segment. The Norwegian film and television industry has been chosen as a test market in order to take advantage of the pre-existing network that the founders have built in this country, and allows the company to build legitimacy under the radar before entering larger markets.

The growth of the Norwegian film market is undeniable. In 2002 there were 15 Norwegian national releases with just under 1 million admissions, a number which has grown steadily over the years to a reported 33 Norwegian national releases with just under 3 million admissions in 2011. Norwegian movies are also proving to be popular with Norwegian audiences, with nearly a third of the top 30 movies of 2011 as national productions (Norwegian Film Institute, 2012). In fact, 2011 was a banner year for the Norwegian film industry, revealing an all-time high production rate, an all-time high in domestic grosses, and one of the biggest market shares ever (Svendsen, 2012). Not only has this success been seen at home, but foreign sales in 2010 represented record highs for Norwegian films.

While Norway is a small market in terms of film and television, there is certainly enough to give Praqo a solid start and prove its worth. In 2009 there were 27 feature films made in Norway, with an additional 300 short and documentary films produced for a total of 327 films. These are considered average yearly figures for the Norwegian film industry (Film Commission Norway, 2009). The price per-synchronization in Norway will be 15 NOK, resulting in a price per-film of approximately 22 500 NOK when utilizing the Praqo Logging System.

When it comes to television, there are about 15 nationally-broadcasting stations in the country (Ranker, 2013). If we approximate that each of these stations creates 3 shows of original programming, each with 12 episodes apiece, that results in 540 new episodes airing on Norwegian TV a year. Since TV shows are shorter than the average film and require fewer synchronizations, it is estimated that each TV show would cost approximately 11 250 NOK per episode in Norway with the Praqo Logging System.

Therefore, based on the calculations found in Appendix I, we estimate a yearly market of approximately 13.4 million NOK in the Norwegian Film and television industry that Praqo will have the opportunity to access. We anticipate reaching 40% of the market by year 5 of commercialization.

4.5.2 United States Market Analysis

After a trial period of one year of full operations in Norway, Praqo should have gained enough legitimacy in order to move into the U.S. market. There are approximately 11,000 companies operating in the production segment, with the top 50 companies generating 80% of the profits (Movie and Video Production Industry, 2013). Post-production alone generated 35 billion NOK in revenue in 2012, supporting 2,441 businesses in the U.S. which employ nearly 27,000 people (IBIS, 2012). Out of all of these firms, only 11 boasted more than 250 employees. Most have nine or fewer, which leads to many niche service providers (PR Web, 2012).

There is growth to be seen in the United States film industry as well. Although the past decade or so has seen the number of feature films produced in the U.S. hovering around 700 per year (UNESCO, 2010), the U.S./Canadian box office figures were at $10.2 billion in 2011, a 6% increase from five years earlier. With the easier accessibility that digitalization has brought to independent and private filmmakers within the industry in terms of financial considerations and training, the next few years should see a continuously growing market in terms of films and revenues.

According to our figures, the United States film industry is about 19x the size of the Norwegian industry. With the average of 700 feature films per year, we can estimate (based on the Norwegian figures) that there is approximately an additional 8 000 short and documentary films made per year. The price per synchronization in the U.S. will be 6 NOK, resulting in a price per film of approximately 9 000 NOK when utilizing the Praqo Logging System.

When it comes to television, there are approximately 2 200 stations operating in the United States (World Fact Book, 2006). Even if we assume that only half of these make their own original programming, at 3 shows per station with 12 episodes each, that makes a total of 39 600 episodes per year. Since TV shows are shorter than the average film and require fewer

synchronizations, it is estimated that each TV show would cost approximately 4 500 NOK per episode in the U.S. with the Praqo Logging System.

Therefore, based on the calculations found in Appendix J, we estimate a yearly market of approximately 256.5 million NOK in the United States Film and television industry that Praqo will have the opportunity to access, with an estimated 4.6% growth rate through 2015 (PricewaterhouseCoopers 2011). We anticipate penetrating 7% of that market by year 5 of commercialization.

4.5.3 Target Market in Chosen Countries

There are several customer groups within the film and television industry that may be interested in utilizing the Praqo Logging System for a variety of reasons. Our target market, however, consists of production companies and film studios. These can be found in Table 11.

	Potential Customers	Collaboration	Decision Maker	End-Users	Examples in Norway	Examples in the U.S.
Target Market	**TV & Film Production Companies**	With post-production houses	Producer	Script Supervisor & 2nd Assistant Cameraperson	Maipo Films, Nordisk Films, Motlys, Paradox Films, Dinamo Story, Speranza Films, Filmkameratene, & Bul Bul Films	Big Red Productions, CatchLight Films, Jaguar Films, Neptune Pictures, Weinstein Productions, Elysian Pictures, etc.
	TV & Film Studios	With Freelance Editors	Producer & Chief Technical Officer	Script Supervisor, 2nd Assistant Cameraperson, Digital Imaging Technician, & Editor's Assistant	Storyline Studios, Monster AS	Sony, Time-Warner, Walt Disney Company, NBCUniversal, Fox Entertainment, Viacom, etc.

Table 11: Target Market

Production Companies. The Praqo Logging System affects processes in both production (or principle filming) and post-production. When it comes to principle filming, this part of the process is run by a production company, which is usually owned by one or more producers. This producer is typically the only full time employee of the production company - everyone else works on a freelance basis. The producer is also in charge of all financial aspects of principle filming, as well as hiring a post-production house to turn raw footage into the polished version common in movie theaters and on television screens today. So although

Praqo affects both production and post-production, the producer is the decision-maker for both companies.

Studios. Studios are companies that typically encompass all aspects of the filmmaking process, including tasks such as principle filming and post-production. For the purposes of the Praqo Logging System, they essentially operate as a production company and post-production company in one, rather than as two separate entities. This means that as with production companies, producers will be the buyers and final decision makers within the studio setting.

It is obvious that there are many people to consider in our target market. But while the product should be created with the end-user in mind, it is the decision-makers who will be the primary targets for consideration in commercialization.

4.5.4 Pains in the Target Market

In order for our product to be successful, we must first identify what those in the target market feel are their biggest needs, and then meet those needs. Some of the biggest pains for our target market are the lengthy wait for digital dailies, the inconvenience of current dailies management software, and the lack of standardization in daily operations.

Lengthy Waits for Digital Dailies. As previously discussed, producers often have to wait at least one full day to view digital dailies, and sometimes more. This can be the difference between easily fixing a mistake while all of the cast, crew, and sets are available, and facing an expensive problem. It can be expensive either in terms of the money spent to bring cast and crew back to the shooting location, or in terms of lost box-office revenues when film is rendered lower-quality by mistakes. Either way, losing money is not appreciated by investors, and may damage the reputation of the producer and his ability to garner investments in the future. Furthermore, physical delivery of DVDs or hard drives worsen the problem, especially when the producer is in a different location from filming. The Praqo Logging System assures that producers receiving digital dailies in a timely manner by shorting the dailies management process, and delivering digital dailies online. They can then make important decisions as quickly as possible, avoiding extra expenses.

Inconvenience of Current Software. There are several competing software systems that perform a portion of the dailies management process, but even the most popular ones do not tend to work properly. These programs tend to make a bevy of mistakes, requiring an employee to manually sort the files and correct said mistakes. This eliminates the time-saving

element, and can even create a longer dailies management process than the manual alternative. The Praqo Logging System, however, utilizes a new patent-protected method in order to perform dailies management mistake-free, as it was intended.

Lack of Standardization. Perhaps due to the heavy reliance upon freelance work in the film and television industry, there is little standardization in general daily operations. These operations vary from not only country to country, but film project to film project. This means that most individuals create their own system for various processes, which can be challenging for other employees to understand. Since a new staff is hired for each film, there is essentially no learning curve. As a result, companies are unable to train their employees in one system that works. The Praqo Logging System introduces processes and software that must be followed in order to operate properly, meeting the desire of the industry for enhanced standardization. Employees will immediately understand the work of another, and less time will need to be spent learning new processes.

4.5.5 Competitor Analysis Falls Short

Praqo competitors operate within three main areas of expertise: script log software applications, video management software, and synchronization methods. Figure 7 outlines these groups and subgroups, while a more detailed breakdown of the main competitors can be found in Appendix K.

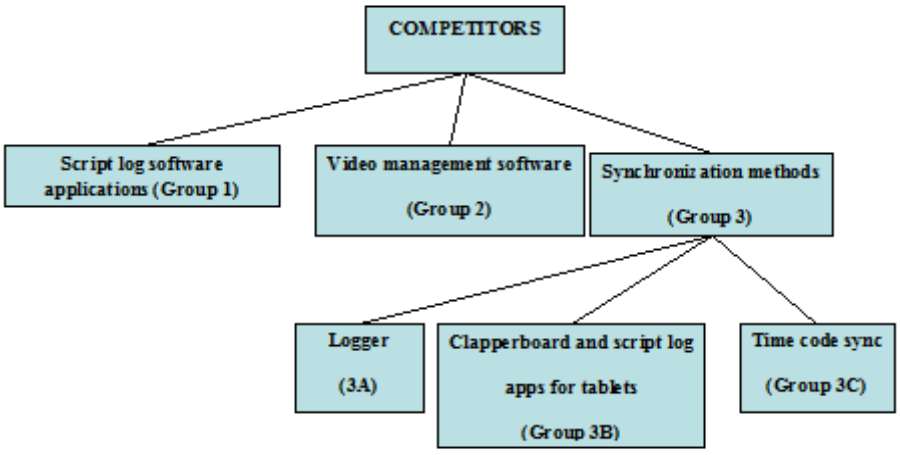


Figure 7: Competitor Groups and Sub-Groups

Group 1 Competitors: Script Log Software Applications. This group is represented primarily by three main competitors, each with a program that helps a script supervisor to

manage their script logs electronically, without the need for a simple Excel document or hand-written notations.

Group 2 Competitors: Video Management Software. Group 2 specializes in handling video storage online together with metadata management. This allows large amounts of files (such as audio, video, and script logs) to be stored, accessed, sorted, and distributed through an online source. We have identified nine competitors in this segment.

Group 3 Competitors: Synchronization Methods. Within this group we have been able to distinguish three subgroups, as the synchronization methods used by each subgroup vary significantly: A) Manual dailies management, B) Clapperboard and script log apps for tablets, and C) Time code synchronization apps. We will discuss each subgroup separately below.

- ***Group 3A Competitors: Manual Dailies Management.*** This is the traditional way in which files for dailies are managed by an editor's assistant. This is the most widely used method in most countries. It is reliable and well-established in the film and television industry and thus, we consider it our most threatening competition.

- ***Group 3B Competitor: Clapperboard and Script Log Applications for Tablets.*** We have been able to identify at least thirteen different clapperboard or script log software applications for tablets. Most of them have very basic functions such as flashing of the screen while sending out the signal and displaying the entered text.

- ***Group 3C Competitors: Time Code Synchronization.*** This group offers the products that are the closest to the Logging System, but they function in a fundamentally different way. These systems synchronize the running time code that is present in both cameras and audio recorders. For example, a video clip that appears at the 3 minute mark will be matched with an audio clip from the 3 minute mark. These time code synchronization products require, however, that the camera and sound recording are synchronized with an external device at least once a day or more. In reality, this rarely happens and these systems are not known for being especially reliable.

4.5.6 Praqo Exceeds the Competition

What makes the Praqo Logging System better than its competitors? We explore this subject further by discussing its three main competitive advantages: covering every aspect of

dailies management, transferring files into the editing system, and providing an accurate and reliable program.

Covers every aspect of Dailies Management. Praqo is the only company that offers a product that covers all three areas of expertise (script log software applications, video management software, and synchronization methods) while other companies specialize in only one or two. This eliminates the need to have different systems for various elements of the dailies management process that must constantly be adjusted.

Transfer of files to editing system. Praqo is the only system so far that is able to transfer data automatically into the editing program. There is no need to convert files or use other programs in order to allow for further editing of the film.

Accuracy & Reliability. Praqo offers a mistake-free solution that has great impact on the dailies management workflow of post-production. There are competitors that offer audio synchronization solutions, but according to film professionals, they are not accurate. This means that it takes even more time to identify and correct mistakes than it would to just perform the synchronization manually.

4.6. A Marketing Plan for Optimal Penetration

4.6.1 Promotional Support

The film and television industry is heavily built upon networking and familiarity, regardless of the country of operations. This is likely due to the freelance nature of its employment force. It is a tight-knit industry in which all of the big players in a region know one another and word-of-mouth spreads quickly. A focus on networking and familiarity also applies when marketing B2B transactions in this industry. The two most important elements to build are the foundations of brand-awareness and trust. Praqo has several means for doing so, which can be found in Table 12.

Promotional Activities	Details
Relationship Building	Single most important aspect of marketing mix. Explain product to customers, help them see value, build interest, and create rapport.
Office Space in Cluster Areas	Obtain office space in penetrated markets in film-cluster areas. Familiarity and trust is built by unplanned interaction.
Film Festivals and Trade Shows	Industry professionals gather at these events to learn and network. Focus on grassroots marketing and promote new technology.
Journalistic Review	Professionals must be aware of trends & cutting edge technology as they emerge. Developing relationships with journalists to encourage coverage.
Free Use in Film Schools	Educate students in the operation of Praqo, and garner goodwill in the community.
Launch Party	Host party to create buzz around the company while providing info to potential buyers. Create a unique event worth attending and remembering.
Co-productions	Target co-productions with international companies in order to spread the word of Praqo virally.
Kickstarter	Utilize industry excitement to generate support through Kickstarter. Build brand awareness and create even better solution for the industry.
Linked-In Advertisements	Build brand-awareness aimed at people within the mass media markets.
Search Engine Optimization	Using search engine keywords in order for potential customers to locate the Praqo website

Table 12: Promotional Mix

4.7. Company Operations and Specified Future Plans

4.7.1 Business Model

In order to show an overview of the general operations of the Praqo Logging System in a succinct and direct manner, we have utilized the business model canvas suggested by Osterwalder. It breaks company operations down by several headings: Key partners, key activities, value propositions, customer relationships, customer segments, key resource, channels, cost structure, and revenue streams. This can be found in Table 13.

<table>
<tr><th>Key Partners</th><th>Key Activities</th><th>Value Propositions</th><th>Customer Relationships</th><th>Customer Segments</th></tr>
<tr><td>Norinnova</td><td>Software Development</td><td rowspan="2">Allow directors & producers to view footage quicker</td><td rowspan="3">Decision makers require a relationship to be built based on reliability and trust</td><td>TV & Film Production Companies</td></tr>
<tr><td>Introfondet</td><td rowspan="2">Providing services to film and television post-production</td><td rowspan="2">TV & Film Studios
Film Schools</td></tr>
<tr><td>Innovation Norway</td><td rowspan="2">Liberate the time of those employees previously managing dailies</td></tr>
<tr><td>NORUT</td><td>Manage Digital Dailies</td><td rowspan="3"></td><td>Private Filmmakers</td></tr>
<tr><td>NRK</td><td rowspan="2">Reduces overall costs</td><td>Freelance Editors</td></tr>
<tr><td>Den Norsk Filmskolen</td><td>Private Filmmakers</td></tr>
<tr><td rowspan="6"></td><td>Key Resources</td><td rowspan="6">Allow for quicker integration of freelance employees</td><td>Channels</td><td rowspan="6"></td></tr>
<tr><td>Software Developers</td><td>Praqo.com</td></tr>
<tr><td>Software</td><td>App Store</td></tr>
<tr><td>Sales people</td><td rowspan="3"></td></tr>
<tr><td>Web Developers</td></tr>
<tr><td>Patents</td></tr>
<tr><td colspan="3">Cost Structure</td><td colspan="2">Revenue Streams</td></tr>
<tr><td colspan="3">Software Developers</td><td colspan="2">Free software</td></tr>
<tr><td colspan="3">Sales & Marketing</td><td colspan="2">Pay Per-synchronization</td></tr>
<tr><td colspan="3">Backend Operational Expenses</td><td colspan="2">Options for Payment at time of Sale</td></tr>
</table>

Table 13: Osterwalder's Business Model Canvas for Praqo AS

4.7.2 Future Milestones

Below you will find a list of milestones that Praqo intends to hit over the next year of development and five years of commercialization. These can be found in Table 14. For a more in-depth look, a tentative action plan for development and commercialization of the Praqo Logging System can be found in Appendix L.

Milestone	Expected Date
Website Interface Complete	September 30th, 2013
Prototype & Software Development Complete	December 31st, 2013
Application Submitted for U.S. Patent	March 31st, 2014
Beta-Testing Complete	June 30th, 2014
Launch Product in Norway	July 15th, 2014
Throw Launch Party	August 1st, 2014
Hire U.S. Sales Person	June 15th, 2015
Secure Partnership with Den Norske Filmskolen	June 31st, 2015
Launch Product in United States	July 15th, 2015
Hire 3rd Software Developer	December 31st, 2015
Hire Additional U.S. Sales Person	June 15th, 2016
Hire 4th Software Developer	December 31st, 2017

Table 14: Milestones

4.7.3 Critical Risk Factors Will Be Overcome

There are several critical risk factors that Praqo must be aware of before commercialization:

Development Stages. The Praqo Logging System is currently in developmental stages, and although the founders are convinced that the technology behind the software is sound, it may take some time to work out any potential problems. On a related note, Praqo has not yet developed a concrete way to protect files that are compressed and uploaded into the system, as file encryption is not an option for this particular system. While they are confident that they will determine a solution before commercialization, it is a crucial point that must be addressed. Releasing the prototype as quickly as possible will be a big step in proving the viability of the product.

Constantly Changing Technology. Another risk may be the appearance of new and advanced technologies that could make the Praqo Logging System obsolete. Technology in the film and television industry is moving very rapidly at the moment; rapidly enough that some editors, for instance, are not wasting time learning new editing systems because they anticipate an even newer version right around the corner. However, Praqo will aim to stay on top of these technological changes by being extremely vigilant in researching new technologies and trends in the marketplace that may affect their product, and adapt the Praqo

Logging System accordingly. Software developers will constantly work on providing up-to-date technology and creating new solutions.

Competition. Not only are there many competitors in the dailies management arena, but there is a possibility that other companies may attempt to use the Praqo patent as a guide for patent manipulation (i.e. going-around the patent). If they are able to improve upon the Praqo process in this way then they may be successful in taking a share of the market. However, this is a threat with any patent as companies that find success will always be emulated by other companies in search of reproducing that success. Therefore, Praqo must attempt to commercialize their product as quickly as possible in order to be first to the market with a reliable product.

Human Resistance to Change. Praqo may have to deal with human resistance to change as it offers human-replacing technology, and it is not clear how strong such resistance might be. In addition to potentially replacing an editor's assistant, some of the staff members will have to use new programs and as well as a new clapperboard. Although resistance to change is a typical factor for startups, it is one that Praqo should be aware of.

4.8. Financial Evaluation, Proposal, & Exit Plan

4.8.1 Finances and Proposal

The chart below in Figure 9 shows the highlights of profit and loss for the Praqo Logging System through year five of commercialization in 2019. Sales begin at just under 2 million NOK in year one, and steadily increase through year five of commercialization when they reach 24 million NOK, showing strong growth after entrance into the U.S. market. Gross margins are also high due to the low direct cost of sales associated with the product, which are at about 13% across the board. Operational costs take a toll on the finances, however, attributed mostly to salaries, and keep Praqo in negative net profit in years one and two. By year three, however, the company is expected to reach cash-flow positive.

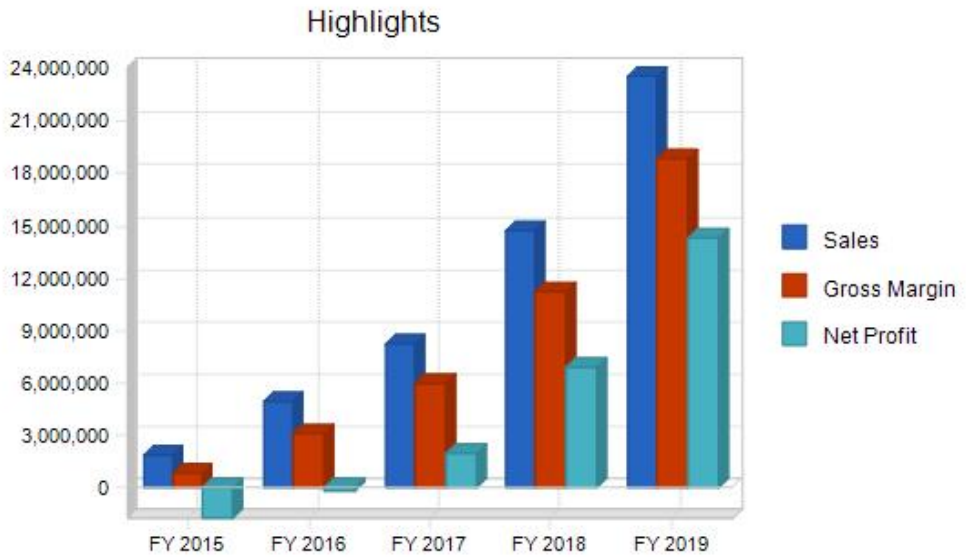


Figure 8: Profit & Loss Highlights

Although sales are expected to grow over time, low beginning sales in years one and two while entering the Norwegian and U.S. markets combined with high operational costs means that we will require an investment in order to stay operational. This investment will help Praqo to fuel customer acquisition, of which we expect little customer churn, and stay operational while building legitimacy. An investment of 1.8 million NOK will allow Praqo to maintain a positive cash balance until sales overcome expenses in year three, as demonstrated in Table 15. For further financial calculations, see Appendix M.

	Year 1	Year 2	Year 3	Year 4	Year 5
Cash from Operations	1 900	4 900	8 200	14 700	23 600
Potential Investment	1 800				
Cash Spent on Operations	3 600	5 000	6 300	7 800	9 300
Net Cash Flow	88	(132)	1 900	6 900	14 300
Cash Balance	529	397	2 400	9 300	23 600

(All figures in NOK 1000)

Table 15: Cash Flow Chart

As mentioned, Praqo has received 1.2 million NOK in government grants in order to fund development of the Logging System. This money is expected to last through the end of the development and beta-testing phases in June of 2014. However, the company will require

additional funding in years one (beginning July 2014) and two (beginning July 2015) of commercialization. By year three, however, Praqo is expected to be cash-flow positive. A diagram of these expectations is shown in Figure 10.

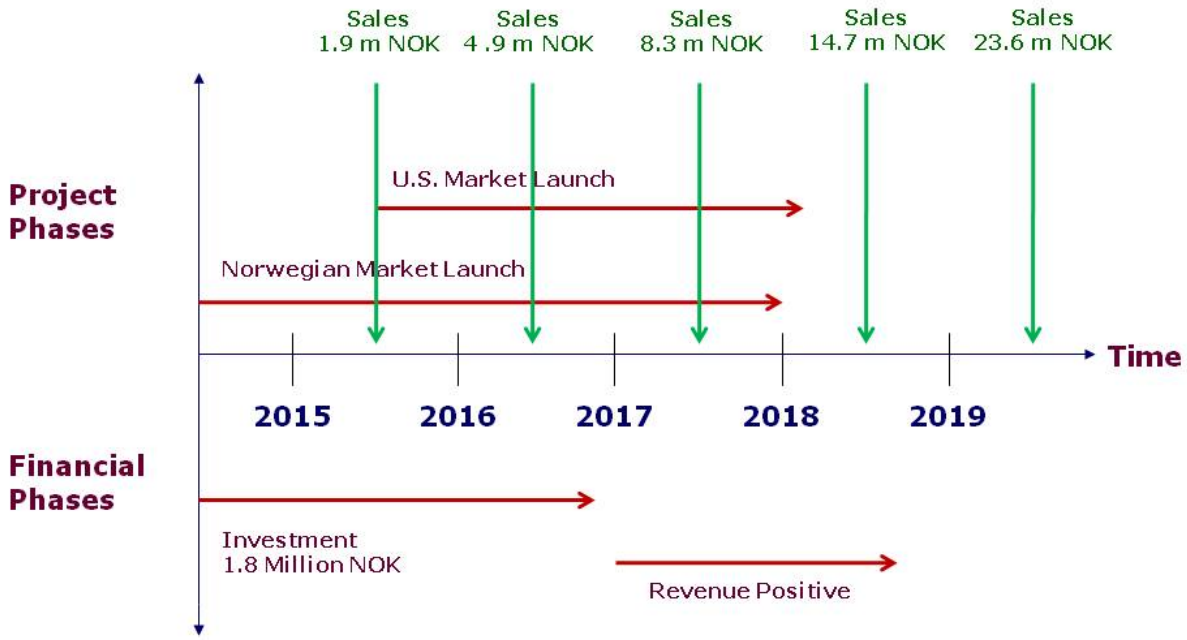


Figure 9: Phases & Investments

In exchange for this investment of 1.8 million NOK the company is willing to part with up to 10% of ownership. This is based upon the current valuation as well as the valuation that is estimated in year five, both of which can be found in Figure 16.

Time Period	Valuation		
	Pessimistic Case (-20%)	Base Case	Optimistic Case (+20%)
Post-Investment 2014	5 800	7 200	8 600
Post-Investment 2019	171 600	214 500	257 400

(All figures in NOK 1000)

Table 16: Praqo Company Valuation

4.8.2 Exit Strategy Shows Promise in Acquisition

If Praqo is able to make the sales and profit that are expected, the most likely exit for investors is by acquisition. Larger companies that have acquired post-production technology companies in the past will see the value in the Praqo Logging System and its patents. Some of these include Infostrada, Prasad Corporation, Autodesk, Slate Media Group, Technicolor, Digital Vision, Reliance MediaWorks, and Telecorps to name a few. A chart detailing these companies and their acquisitions can be found in Appendix N. Praqo is a company that will still have entrance into huge film and television markets such as India and Nigeria as a possibility for the future, along with a variety of other strong European markets. There will still be a lot of money to be made and companies should be interested in taking advantage of that opportunity.

Appendicies

Appendix A: Glossary

Term	Definition
Digital dailies	Raw film footage viewed daily by the producer and other key staff members in order to determine whether a scene is acceptable or needs to be filmed again. Dailies consist of the synchronization of three types of files: video files, audio files, and script log files.
Script log	Detailed description of each take of the film with references to the scene, actors, wardrobe, etc to record details important for continuity done by a script supervisor. For example, the script log may mention that a candle in the scene is burnt halfway down. If the scene has to be shot again, there is a reference to height of the candle for continuity purposes.
Script log software	Computer program to write a script log in.
Video management software	Computer programs that handle video storage online together with metadata management.
QR code (Quick Response Code)	A type of barcode consisting of black modules forming a square grid read by a imagining device and used for fast item identification, product and time tracking, etc.
Timecode	A numeric code or a number of codes produced at regular sequences of time as a result of timing synchronization. In filmmaking, the start and end timecodes of shots are logged for further reference in the editorial room.
Logging	A synchronization of files.
Transcoding	Converting of files from one encoding to another. This process usually involves decoding of the original file to and intermediate

	format (uncompressed) and then encoding it into the format of the target file.
Editor's Assistant	An entry level position in film industry that comprises manual synchronization of audio and video files with the scrip log files into the digital dailies.
DIT (Digital Imagining Technician)	A position within film industry whose responsibility is to digitally manipulate the video captured on the new HD and 24p video cameras, in order to create the look requested by the director of photography and the director. The DIT is also responsible for preparing the visual portion of the dailies, transcoding the files, and may also deliver them to the director when they are synchronized and complete.

Appendix B: Resources

Aas, N. K. (2012), Norwegian Film Institute Export Survey 2010. Norwegian Film Institute. Available http://www.nfi.no/english/news/norwegian-film-institute-export-survey-2010

Abdul, A., Kalwani, M. U. and Kovenock, D. (1993), "Selecting Product Development Projects: Pioneering versus Incremental Innovation Strategies," Management Science, 39(3), pp. 255- 274.

Asheim, B., Coenen, L., and Vang, J. (2007), "Face-to-face, buzz, and knowledge bases: sociospatial implications for learning, innovation, and innovation policy", Environment and Planning C, Vol 25 No 5, p. 655.

Barraclough, L. (2012), "Norway: Beefing up local industry", Variety. Available http://variety.com/2012/film/news/norway-beefing-up-local-industry-1118053898/

Barringer, B. R. and Ireland D. R. (2010), Entrepreneurship: Successfully Launching New Ventures Global Edition. Pearson Education Inc: Upper Saddle River, New Jersey.

Bondebjerg, I. and Redvall, E. N. (2011), "A Small Region in a Global World: Patterns in Scandinavian Film and TV Culture", CEMES Working Papers.

Bower, J.L., and Christensen, C.M. (1995), "Disruptive technologies: catching the wave", Harvard Business Review Video.

Butcher, M. (2012), "Is Norway Leaving Its Tech Startups Out In The Cold?" Website: http://techcrunch.com/

Byers, T. H., Dorf, R. C., Nelson A. J. (2008), Technology Ventures: From Idea to Enterprise.

McGrawHill: New York.

Chandler, J. (2010), “The Max Manus Effect: A Discussion of Norwegian Cinema”, The Foreigner. Available http://theforeigner.no/pages/columns/the-max-manus-effect-a-discussion-of-norwegian-cinema/

Chapain, C., Cooke, P., De Propris, L., MacNeill, S. And Mateos-Garcia, J. (2010), “Creative clusters and innovation”, Putting Creativity on the Map. London*: NESTA*.

Creswell, J. (2009), Research Design: Qualitative, Quantitative, and Mixed Methods Approaches. Thousand Oaks, CA: SAGE Publications Inc., pp. 129 – 143.

Crooker, K., Baldwin, D., and Chalasani, S. (2009), “RFID technology as sustaining or disruptive innovation: Applications in the healthcare industry”, European Journal of Scientific Research, Vol 37 No 1, pp. 160-178.

Currah, A. (2003), “Digital Effects in the spatial economy of Film: Towards a Research Agenda”, Area, Vol 35 No 1, pp 64-73.

Davis, C. H., Creutzberg, T. and Arthurs, D. (2009), “Applying an innovation cluster framework to a creative industry: The case of screen-based media in Ontario”, Innovation: Management, Policy & Practice, Vol 11 No 2, pp. 201-214.

De Vaus, D. A. (2001), Research Design in Social Research. London: SAGE.

Film Commission Norway. (2009), “Film in Norway: Questions about film production in Norway”, Norwegian Film Institute. Available http://www.norwegianfilm.com/index.php?ID=FAQ&ID2=Oversikt&ID3=1

Film & Kino. (2013), Cinema Results 2012. Website: http://www.kino.no/english/.

Gillham, B. (2000), The Research Interview. New York: Continuum.

Hall, M. (2010), Innovation Africa. CODESRIA Bulletin, Vol 3 & 4, pp. 3-6.

Hartley, J. (2004), "Case study research", Essential Guide to Qualitative Methods in Organizational Research, pp. 323-333.

IBISWorld, 2012. Global Movie Production & Distribution: Market Research Report. NAICS. Available http://www.ibisworld.com/industry/global/global-movie-production-distribution.html

IBISWorld.co.uk, 2012. Film, Video Production in the UK: Market Research Report. NAICS. Available http://www.ibisworld.co.uk/market-research/film-video-production.html

Kassicieh, S. K., Anderson, S. W., Romig, A., Cummings, J., McWhorter, P., and Williams, D. (2000), "A model for technology assessment and commercialization for innovative disruptive technologies", Engineering Management Society, 2000. Proceedings of the 2000 IEEE, pp. 340-344.

Kassicieh, S. K., Walsh, S. T., Cummings, J.C., McWhorter, P. J., Romig, A. D. and Williams, W. D. (2002), "Factors Differentiating the Commercialization of Disruptive and Sustaining Technologies", IEEE Transactions on Engineering Management, Vol 49 No 4, pp. 375 – 387.

Klowden, K., Chatterjee, A. And Hynek, C. F. (2010), "Film Flight: Lost Production and Its Economic Impact on California", Milken Institute.

Kvale, D. (1996), Interviews. London: SAGE Publications.

Lackéus, M. (2012), "Venture Creation Programs: 14 Case Descriptions", Chalmers University. Available http://uit.no/Content/323547/Venture%20Creation%20Programs%20-

%2014%20case%20descriptions%20in%20USA%20and%20Europe.pdf

Lager, T. and Hörte, S.Å. (2002), ”Success factors for improvement and innovation of process technology in process industry”, Integrated Manufacturing Systems, Vol 13 No 3, pp. 158 – 164.

Lawrence, P. R. (1969), “How to deal with Resistance to Change?”, Harvard Business Review January 1969, pp. 50-57.

Levin, J. (2009), “An Industry Perspective: Calibrating the Velocity of Change”, Media Industries: History, Theory, and Method. Wiley-Blackwell, Malden, MA, pp. 256-253.

“Logger”, Get In Media. Retrieved March 20th, 2013 from http://getinmedia.com/careers/video-logger

Ludvigsen, H. (2012), “Slides to Norinnova Technology Transfer Workshop for BCE: Market Survey”, pp. 1-16.

Manley, B. (2011), “Moving Pictures: The History of Early Cinema”, Available http://165.215.193.21/discoveryguides/film/review.pdf

Martin, R. and Moodysson, J. (2011), “Innovation in symbolic industries: the geography and organization of knowledge sourcing”, European Planning Studies, Vol 19 No 7, pp. 1183-1203.

McQuarrie, E. F. (2005), The Market Research Toolbox: A Concise Guide for Beginners. Thousand Oaks, CA: SAGE Publications Inc.

Moore, D., Oesch, J., Zietsma, Ch. (2007), „What Competition? Myopic Self-Focus in Market-Entry Decisions”, Organization Science, Vol 18 No 3, pp. 440 -454.

Moore, G. A. (1991), Crossing the Chasm. New York: Harper Collins.

Movie and Video Production Industry. (2013), ReportLinker. Retrieved March 28th, 2013 from http://www.reportlinker.com/ci02094/Movie-and-Video-Production.html

Nelson Knupfer, N. and McLellan, H. (2001), "Descriptive Research Methodologies", Handbook of Research for Educational Communications and Technology. Chapter 41. Available http://learngen.org/~aust/EdTecheBooks/AECT_HANDBOOK96/41/41-01.html

Nederlands Film Fonds. (2012), Film Financing Abroad: Norway. Available http://www.filmfonds.nl/international-affairs/film-financing-abroad/norway/Norway

Nieto, M. (2004), "Basic Propositions for the Study of the Technological Innovation Process in the Firm", European Journal of Innovation Management, Vol 7 No 4, pp. 314-324.

Norwegian Film Institute. (2012), Facts & Figures 2011. Available http://www.kino.no/incoming/article1053255.ece/BINARY/Facts++Figures+2011_WEB.pdf

Pager, S. (2012), "Folklore 2.0: Preservation through Innovation", Available http://works.bepress.com/sean_pager/4

Petrusson, U. (2004), Intellectual Property & Entrepreneurship. Göteborg: Center for Intellectual Property Studies.

Porter, M. E. (1983), "The technological dimension of competitive strategy", in R. S. Rosenbloom (Ed.), Research on Technological Innovation, Management and Policy, Vol 1. JAI Press, Greenwich, CT, pp. 1-33.

Porter, M. E. (1980), Competitive Strategy: Techniques for Analyzing Industries and Competitors. New York: The Free Press.

Wikipedia: The Free Encyclopedia. “Post Production” Available https://en.wikipedia.org/wiki/Post-production

Potter, C. (2013), “The Post-production Industry”, Screenlight. Available http://www.screenlight.tv/blog/2013/01/16/the-post-production-industry-in-2013

PricewaterhouseCoopers. (2011), “Report predicts rebound in entertainment, media spending over next 5 years”, Hollywood Reporter. Available http://www.hollywoodreporter.com/news/report-predicts-rebound-entertainment-media-200965market%20growth

Ranker. (2013), “TV Channels of Norway”, Available http://www.ranker.com/list/tv-channels-of-norway/tv-channels

Raymond, A. H. (2010), “Technology value as a dynamic strategic framework”, European Business Review, Vol 22 No 5, pp. 556 - 571.

Rice, M. P., Leifer, R. and O'Connor, G. C. (2002), “Commercializing Discontinuous Innovation: Bridging the Gap From Discontinuous Innovation Project to Operations”, IEEE Transactions on Engineering Management, Vol 49 No 4, pp. 330-340.

Ryan, M. D. and Hearn, G. N. (2010), “Next generation ‘filmmaking’: new markets, new methods and new business models”, Media International Australia: Incorporating Culture and Policy, Vol 136, pp. 133-145.

Skei, C. (2010), “Hollywood in Norway: Distribution and Repertoire”, Available https://www.duo.uio.no/bitstream/handle/10852/27299/master_c_skei.pdf?sequence=

Squier, J. (2010), “Art and Innovation: Claiming a New and Larger Role in the Modern

Academy", Disciplining the Arts: Teaching Entrepreneurship in Context, p. 35.

Susman, G. , Warren, A. and Ding. M. (2006), "Product and Service Innovation in Small and Medium-Sized Enterprises", The Smeal College of Business at Pennsylvania State University. Report to The National Institute of Standards and Technology.

Svendsen, T. O. (2012), "International Film Guide: Norway. Abu Dabi Film Commission", Available http://cineuropa.org/Files/2012/09/11/1347353837266.pdf

Thomond, P. and Lettice, F. (2002), "Disruptive Innovation Explored", Concurrent Engineering Conference Proceedings July 2002.

Timmons, J. A. and Spinelli, S. (2009), New Venture Creation: Entrepreneurship for the 21st Century. McGrawHill: New York.

Treacy, M. and Wiersema, F. (1995), "How Market Leaders Keep Their Edge", Fortune, Vol 131 No 2, pp. 88-93.

Tucker, M. L., Powell, K. S., and Meyer, G. D. (1995), "Qualitative research in business communication: A review and analysis", Journal of Business Communication, Vol 32 No 4, pp. 383-399.

Uhan, A. and Kino, M. (2009), "Norway and Film", Wordpress. Available http://kinomreza.files.wordpress.com/2009/12/norway.pdf

Unesco Institute for Statistics. (2011), Cinema Statistics. United Nations Educational, Scientific, and Cultural Organization. Available http://www.uis.unesco.org/culture/Pages/movie-statistics.aspx

VCP List. (2012), "Venture Creation Programs List" Chamers University. Available

http://vcplist.com/

Walsh, S. T., Kirchhoff, B. A., and Newbert, S. (2002), “Differentiating market strategies for disruptive technologies”, Engineering Management, IEEE Transactions, Vol 49 No 4, pp. 341-351.

World Fact Book. (2013), “Field Listing: Television Broadcast Stations”, Central Intelligence Agency. Available https://www.cia.gov/library/publications/the-world-factbook/fields/2015.html

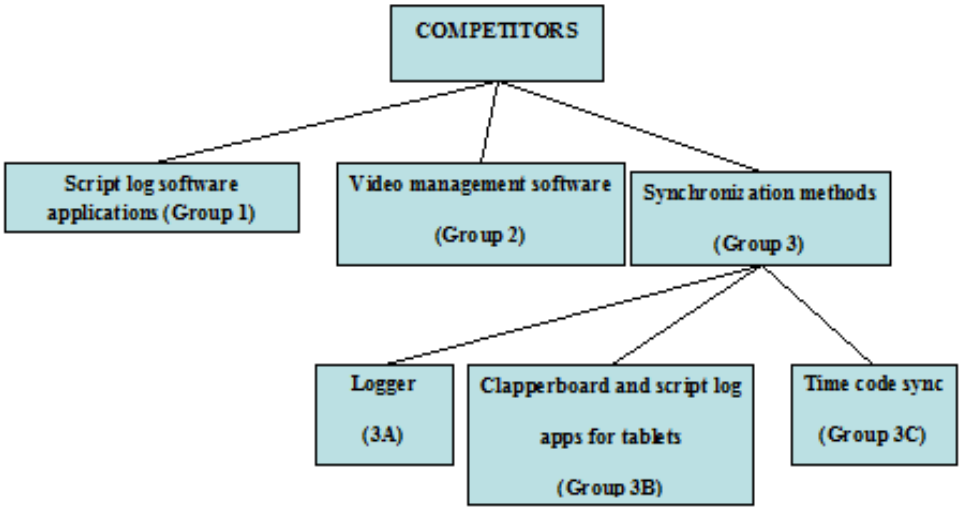
Zucker, D. (2009), How to Do Case Study Research. University of Massachusetts School of Nursing Faculty Publication Series, Chapter 14.

Appendix C: Praqo Interview Details

Interviewee	Company and Position	Type of Interview	Focus of Interview
Anders Bergland	Drømmesuiten, Editor	Structured	Dailies Management from a Editor's Perspective
Andreas Herzog Grimsø	Storyline Studios, Digital Imaging Technician	Unstructured	Dailies Management from a DIT's Perspective, Insights into Drylab as a Competitor
ArveFigenschow	Norwegian Film Institute, Produksjonrådgiver langfilm	Structured	Overview of the Filmmaking Process, On-Set Dailies Management, Sources of Funding, Perspective of a Line Producer
Benjamin Kehlet	Praqo, Software Developer	Unstructured	Insights into Praqo Software Development, Overview of Praqo as a Start-up, Direction of Company
JannikKehlet	Praqo, Business Developer	Unstructured	Insights into Business Development of Praqo, Overview of Praqo as a Start-up, Direction of Company
Norman Hollyn	University of Southern California's School of Cinematic Arts, Media Expert	Structured	Dailies Management from the Perspective of an Editor/Producer specific to American Film
PålHenrik Wagner	Monster AS, Chief Technical Officer	Unstructured	Operations of a Company such as Monster, Perspective of Praqo from a CTO
RunarBerntsen	Jackfruit Production & Post-Production, Producer and Founder	Structured	Overview of Norwegian Film and television industry, Dailies Management from a Producer's Perspective
Sam Shave	Jackfruit Production & Post-Production, Supervising Editor and Founder	Structured	Overview of Norwegian Film and television industry, Dailies Management from an Editor's Perspective

Appendix D: Detailed Competitors Analysis

In the case of Praqo, current competitors operate within three main areas of expertise, as found in Figure 3.8: script log software applications, video management software, and synchronization methods. However, it is worth noting that Praqo is the only company that offers a product that covers all three areas of expertise while other companies specialize in only one or two. We have not been able to identify any product among competing companies that would cover the same number or more functionalities than the Praqo Logging System, but we have been able to identify competitors in each area of expertise.



Competitors of Praqo and their areas of expertise

Group 1 Competitors: Script log software applications

This group is represented primarily by three main competitors, each with a program that helps a script supervisor to manage their script logs electronically, without the need for a simple Excel document or hand-written notations. Part of the Praqo software includes such a program. Competitors include ScriptT Systems LLC with its product ScriptE, That One Kid with its Continuity for iPad, and Greyfade Media with its QRSlate. However, Digital Heaven may also be a threat, as are Timecode+ and Fungrep, two products released by independent software developers. The strongest competitors are presented in the next table.

Competitors/Country	Description
ScriptT Systems LLC/ U.S.	ScriptE assists a script supervisor with importing the script from Final Draft through a scene-by-scene breakdown, logging shots using a timecode, capturing stills for printing, lining the script, and sending via email professional reports. ScriptE is available for 3500,00 NOK for PC and Mac while a version for iPad is at 2100,00NOK on AppStore. ScriptE is the product with the longest history of performance in the market and has proven to work successfully for many script supervisors.
Greyfade Media/U.S.	Its product 'QRSlate' – Film Slate and Digital Assistant Editor organizes media automatically with QR codes and it has a capacity to link these to the notes made on iPad similarly to Praqo. However, QRSlate does not use the method for identification of sound and consequently, it cannot synchronize audio and video automatically. It is offered for free as an app at AppStore, but this app needs to be used with QR Slate Desktop Importer which is available for 294,00 NOK also at AppStore. In addition to all that, Greyfade is well linked to the social media platforms such as Facebook, Twitter, and YouTube.
Digital Heaven/UK	Digital Heaven provides broadcast post-production facilities for clients such as the BBC, Channel Four and many independent production companies. It's two products of most consequence to Praqo are 1) VideoSpace that clocked up over 10,000 downloads in the first month of release and was featured as 'Widget of the Week' on macworld.com, and 2) 'Movie Logger' - a text-based logging application for QuickTime movies.

Group 1 Competitors: Script log software applications

Group 2 Competitors: Video Management Software.

Group 2 specializes in handling video storage online together with metadata management. This allows large amounts of files (such as audio, video, and script logs) to be stored, accessed, sorted, and distributed through an online source. Praqo also offers this function through its web server. We have identified nine competitors in this segment: Square Box Systems LTD, Aframe Ltd, Drylab R&D AS, Colorfront, DigitalFilmTechnology, Ripple Digital Media, CinePostproduction GmbH, MediaSilo, and Assimilate Inc. We present the three main competitors from this group are found in the next table.

Competitors/Country	Description
Square Box Systems LTD/UK	A software company specializing in the development of multimedia tools and providing technical consultancy in a variety of technologies. Square Box Systems LTD offers products within two categories: standalone products and networked products. Its free product, CatDV, allows imports of any kind of media file into a CatDV catalog and creates a searchable database of all the clips. The drawback of CatDV as compared to the Praqo Logging System is that it still takes a significant amount of time for data to transfer.
Drylab R&D AS/Norway	Drylab R&D offers two products: 'Dailies Viewer' and 'Dailies Creator.' Its Dailies Viewer is sold at 490,00 NOK on AppStore. Dailies Viewer is intended for use on feature film productions and requires Dailies Creator to generate content. Dailies Viewer has already been used in real film post-production. Drylab has been handling all metadata and dailies deliveries for the TV series based on Lars Saabye Christensen's novel *The Half Brother (Halvbroren),* directed by Per Olav Sørensen and screened on NRK in January 2013. It is definitely a serious and nationally based competitor to Praqo as their product has already been used in the film production and received very good ratings among two of the Norwegian film directors. However, Drylab product is focused mainly on the visual look of the programs and not very much on the audio. From personal interviews performed, the focus on audio is very much required and Praqo Logging System can compete with Dailies Viewer once it proves that it covers more in-demand functionalities than Dailies Viewer and offers more than creation and management of dailies.
Colorfront/U.S.	Colorfront offers products that are directed at dailies: 'Colorfront On Set Dailies' and 'Colorfront Express Dailies.' On Set Dailies integrates production tools for dailies work. On Set Dailies has been awarded a 2012 Primetime Engineering Emmy by the Academy of Television Arts & Sciences. On-Set Dailies is regarded to be the leading dailies system for Hollywood features and primetime episodic television in the U.S.

Group 2 Competitors: Video Management Software

Group 3 Competitors: Synchronization Methods.

Within this group we have been able to distinguish three subgroups, as the synchronization methods used by each subgroup vary significantly: A) Manual dailies management, B) Clapperboard and script log apps for tablets, and C) Time code synchronization apps. We will discuss each subgroup separately.

Group 3A Competitor: Manual Dailies Management. The traditional way in which files for dailies are collected, organized, synchronized, transcoded, delivered, and added to the

editing system are typically performed by an editor's assistant, although some responsibilities are increasingly falling to the digital imaging technician. This is the most widely used method in Norway for dailies management, as well as in other countries around the world. It is reliable and well-established in the film and television industry and thus, it is considered the most threatening competition to the Logging System. If the Praqo is to take a foothold in the film and television industry, it will most likely render the position of editor's assistant obsolete.

The Praqo Logging System will automate the process that is typically performed by an editor's assistant manually. Dailies management is perceived by many in the industry as a very repetitive set of tasks that does not require creativity or intelligence to perform. It is an entry-level position that is meant to ultimately lead to other, more interesting positions in post-production. Due to the human-replacing technology of the Praqo Logging System, the hours required for this sort of work will be drastically reduced. It will allow files to be logged within minutes per day, a process which took a manual dailies management a full work day to complete. This reduction can lead to the potential shrinking of such a position, the reassigning of tasks, or possible elimination. As the digital imaging technician has already begun to take on some of the dailies management responsibilities, it stands to reason that any spillover from this potentially eliminated position could be transferred to the DIT (Logger, 2013).

One of the challenges related to replacing an editor's assistant with the Praqo Logging System may be a human resistance to change. Dailies management has been a manual process for years, and we cannot know how the industry will react. The good news is that the film and television industry has been in a constant state of flux for some time now, due to the rapid increase in performance technology and its widespread availability. This trend towards the digitalization of film production and post-production may be beneficial to acceptance of the Praqo Logging System.

However, human resistance to change is a complex issue and does not always follow logical assumptions. It is necessary to be aware of such a challenge and to prepare accordingly by investigating the field of human psychology and business in order to identify methods and strategies for overcoming a resistance to change. In fact, contrary to common knowledge, experts agree that people do not necessarily resist technical change and that most of this resistance can be avoided (Lawrence, 1969). What people actually resist is more often a social change - the change

in their human relationships that is generally paired with a technical change. Experts also agree that management can take specific steps to deal constructively with the wary attitudes of employees. These steps can include involving employees in the process of introducing a new technology to daily workflow or encouraging them to think in different ways in order to foster acceptance (Lawrence, 1969). Thus, when resistance to change occurs, a company such as Praqo must be prepared to develop and implement an adequate strategy for dealing with such pushback.

Group 3B Competitor: Clapperboard and script log applications for tablets. We have been able to identify at least thirteen different clapperboard or script log software applications for tablets. Most of them have very basic functions such as flashing of the screen while sending out the signal and displaying the entered text. Praqo, on the other hand, offers a clapperboard application for tablets which not only displays the necessary information that must appear on a clapperboard for visual cues, but also assigns a specific code to each scene for later synchronization. A few of the competitors are aimed at the professional market, but none of them offer the automated handling of data that is included in the Praqo software. These competitors are presented in the next table.

Developer/Company	Description
PureBlend Software	'MovieSlate®' (Clapperboard & Shot Log) by PureBlend Software is an all-in-one digital slate, clapperboard, shot log, and notepad used for film, TV, documentaries, music videos, and interviews. It is offered at the price of 175 NOK on AppStore.
TIZA	'TIZA DSLR Slate® 20/20 Clapperboard' is offered at the price of 14,00 NOK and has more robust functionalities than a standard clapperboard app.
Matt Cowlin	'Professional ClapperBoard' is offered at the price of 21,00 NOK. In addition to the standard features, Professional ClapperBoard includes electronic slate and digital timecode.

Group 3B Competitors: Clapperboard and script log applications for tablets

Group 3C Competitors: Time code synchronization.

This group offers the products that are the closest to the Logging System, but they function in a fundamentally different way. These systems synchronize the running time code that

is present in both cameras and audio recorders. Therefore, a video clip that appears at the 3 minute mark will be matched with an audio clip from the 3 minute mark. These time code synchronization products require, however, that the camera and sound recording are synchronized with an external device at least once a day or more. In reality, this rarely happens and these systems are not known for being especially reliable, due to a phenomenon called time drift. Praqo, however, is not based on time code synchronization, but relies instead upon matching QR codes embedded in the files. Our evaluation includes products by Red Giant, WooWave, and Assisted Editing, presented in the next table.

Company/Country	Description
Red Giant/U.S.	A definite market leader in this group is Red Giant with its product Plural Eyes for Mac that automatically synchronizes audio and multi-camera video. It costs 1155 NOK and has already been used by various post-production companies in Norway. Although it takes less time to synchronize the audio and video using Plural Eyes, the software is not precise enough and takes significant amounts of time to correct mistakes. According to an interview with a Norwegian editor (A. Bergland, personal interview, 9/4/13): "(…) it is faster to do it manually than to use this software, because the time it takes to correct mistakes and find the mistakes that the software makes evens out in the long run."
WooWave/Poland	Another product that deals with audio synchronization is called WooWave Sync Pro. It is an alternative product to Plural Eyes and it works both on Mac and Windows. It also supports FCP 6,7 FCP X Premiere CS6 and Sony Vegas. It has been used by professionals and it seems to have the same drawbacks as Plural Eyes related to the high number of mistakes that need to be identified and corrected. This affects the overall time of synchronization.
Assisted Editing/U.S.	Company offers an app Sync N Link, available for 1400 NOK at AppStore. It is an application that syncs sound and picture for Final Cut Pro X using timecode. It eliminates the task of manually synchronizing dailies by processing of unsynchronized clips exported from Final Cut Pro X.

Group 3C Competitors: Time code synchronization.

Appendix E: SWOT Analysis

Strengths. There are many strengths to the Praqo system. To begin with, it offers a service that is currently not offered in the film and television industry. There are other software

applications available for making the script log such as ScriptT Systems LLC (http://www.scriptesystems.com/) and That One Kid (http://continuityipad.com/), but none of these can perform a simple transfer of data into the editing system. This is what Praqo will do, in addition to synchronizing sound and video.

When it comes to synchronizing the different reports, Praqo is also able to handle all of the reports simultaneously. This includes the script logging report, the camera report (with information on lenses, filters, ISO, aperture, etc), and the sound report (with information on the quality of the sound recording), along with the actual video and audio files. The synchronization usually takes several weeks for an editor's assistant to perform manually, and will now be performed automatically in a matter of hours. This will not only save production and post-production companies time, but it will also save them weeks of salaries that would have otherwise been paid for the unskilled labor of the editor's assistants.

Another major strength of the product is the distribution of dailies that are intended for the director and key crew members of the film. This is raw and unedited material that needs to be viewed as soon as possible (in fact, daily) in order to identify potential changes that must be made in the filming. Through Praqo, any necessary parties will be able to access these files at any time from any location by downloading them from the Praqo cloud.

Human resources are extremely important to the success of a startup, and the founding team of Praqo has many that will be beneficial to the company. Jannik Kehlet, for instance, brings his competencies in film production, as he has been educated in that field. In addition, he has worked on film sets as a cinematographer, lighting technician, and an assistant camera operator. This has allowed him to develop many networks within the Norwegian film and television industry and production companies. Benajmin Kehlet is educated in informatics, and is developing the software together with Anders Bakken, senior developer at Netflix. Thus, Praqo has a strong team in terms of developing the product further as well as building, developing, and maintaining a network including Norwegian production companies.

Another resource that the company hopes to secure is a patent for the Praqo system. The software uses image recognition for identifying video clips, and this technology was determined to be patent-worthy by Onsagers patent attorneys, and a patent application was recently filed in

Norway and the EU with the potential to file for a U.S. patent within 12 months. A patent will increase the value of the company for potential investors, and it will also prevent others from making, using, selling, or distributing the patented invention of Praqo.

Weaknesses. Weaknesses are a reality for every company, whether they are startup or established. The best way to handle them is to be self-reflective and identify those weaknesses so that they can be handled appropriately. One weakness of the Praqo Logging System is that it lacks concrete data supporting its competitive advantage. It is still in the developmental phase, leaving it very vulnerable to inside and outside forces. The prototype has not yet been developed, and the estimated date for physical development has been pushed back at least once. Without a prototype, the system cannot be tested. However, difficultly in adhering to a time schedule is problem that is common in startup companies, as unexpected disturbances consistently pop up along the way to slow things down. While it is something that Praqo should be aware of and attempt to rectify, there is no reason to think this will be a fatal stumbling block in the commercialization process.

Praqo also has no specific way of protecting the files that are manipulated within the system from outside forces such as hackers, as the files cannot be accessed by the Praqo staff within the cloud if they are encrypted. Therefore the Praqo Logging System may be vulnerable to hackers who want to release a first look at a new film. They do have a plan for protecting the system against internal leaks, however, as each completed daily will have a watermark printed on it with the name of the staff member who was meant to receive it. This way, the source of the leak can be identified and stopped.

Opportunities. The U.S. recession may be perceived as a threat as well as an opportunity. The film and television industry was affected by the financial crisis, just as many other industries were worldwide. Due to the consequential financial constrictions, the film and television industry should be interested in reducing the costs of post-production. It is estimated that the Praqo software will reduce the costs of synchronization by half of the current system.

As all film production companies have used the manual labor of editor's assistants for years, this technology has a potential to influence the whole film and television industry if it

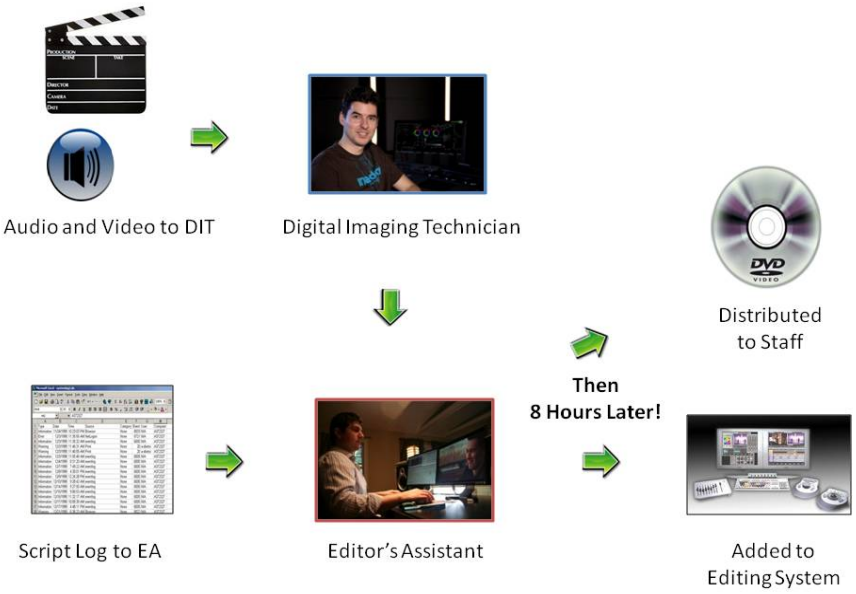
proves viable and worthy. If effective, Praqo software could render the profession of editor's assistant obsolete in all film post-production companies in the world.

Threats. Although we consider Praqo to be a strong product with a great chance of success in the marketplace, there are always outside forces that make any commercialization uncertain. One threat is the possibility of other companies that may attempt to use the Praqo patent as a guide for clever manipulation in creating a product that is similar to Praqo, but without infringing on the patent. If they are able to improve upon the Praqo process in this way then they may be successful in taking a share of the market. This is a threat with any patent, however, as companies that find success will always be emulated by other companies in search of reproducing that success.

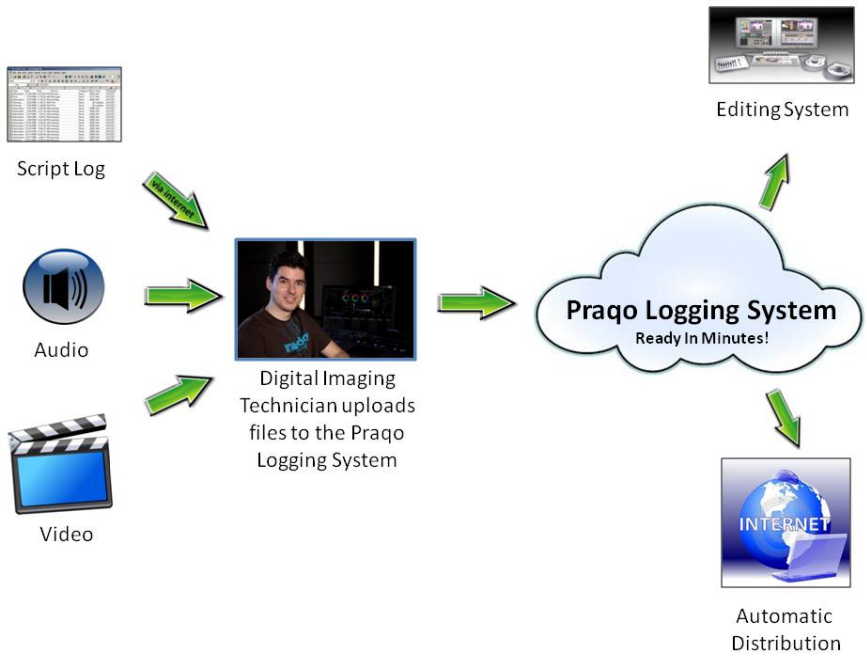
Another threat may be the appearance of new and advanced technologies that could make the Praqo Logging System obsolete. Technology in the film and television industry is moving very rapidly at the moment; rapidly enough that some editors, for instance, are not wasting time learning new editing systems because they anticipate an even newer version right around the corner. The only thing Praqo can do to stay on top of these technological changes is to be extremely vigilant in researching new technologies and trends in the marketplace that may affect their product, and adapt the Praqo Logging System accordingly.

Finally, Praqo may have to deal with human resistance to change as it offers human-replacing technology, and it is not clear how strong such resistance might be and how quickly it can be overcome. In addition to potentially replacing an editor's assistant, some of the staff members such as script supervisors, 2nd assistant camerapersons, and production sound mixers will have to use a new program in order to keep their logs and reports in order, while the person utilizing the clapperboard will need a new version of this as well. The Praqo Logging system is asking many people to change their current ways, but once these employees become used to the new technology (which should be very simple to learn in order to combat resistance to change), they should find it more convenient personally and better for their overall time management and the budget of the production.

Appendix F: Traditional Dailies Management



Appendix G: Dailies Management with the Praqo Logging System



Appendix H: The Cost Reduction of Praqo

Costs of Traditional Dailies Management. The traditional way to manage dailies would involve hiring an editor's assistant on a freelance basis. This person performs the functions manually and is paid per work day or per work hour.

Although there are a variety of functions associated with dailies management, the synchronization of the video files, audio files, and script log files is the most labor-intensive and time-consuming. According to the idea providers, an editor's assistant uses 5,4 minutes to synchronize one clip. It is estimated that in a standard work day of 7,4-8 hours, the editor's assistant can synchronize around 80 clips. The average movie is estimated to run about 1,5 hours which requires about 18 days of filming, and 1 500 clips synchronized. This also means that an editor's assistant will be paid for a minimum of 18 work days on a feature film, but some feature films take as long as 45 days to film.

The wages of an editor's assistant will vary between Norway and the U.S., due to the higher cost of living in Norway. While the average rate of pay for this position is 1 500 NOK per work day in Norway (social insurance included), it is about 770 NOK (or $130) per work day in the U.S. In addition to the cost of the manual labor, the editor's assistant also requires an editing suite in which to manage the dailies. While an editor has his own editing suite, the editor's assistant must rent one on a day-to-day basis. This costs approximately 400 NOK or more every day in addition to his salary, and is about the same in Norway as in the U.S. In total, this means that it costs between 35 000 and 88 000 NOK for a Norwegian editor's assistant to manage the dailies for each feature film, and about 21 000 to 53 000 in the U.S.

Costs of Dailies Management with the Praqo Logging System. The Praqo Logging System is intended to function as a SaaS (software as a service), in which the software is free but customers pay for the logging service per synchronized clip. This business model for providing logging services has not yet been attempted in the industry thus far. With the Praqo Logging System, one synchronization will cost 15 NOK in Norway, which means that the average feature film (at 1 500 synchronizations per feature film) will cost 22 500 NOK as opposed to the 35 280 NOK it would cost for traditional manual logging. This reduces costs of the logging by 36-37%, as seen in Figure 2. In the U.S., one synchronization will cost 6 NOK, making the average feature

film 9 000 NOK to synchronize as opposed to the 20 900 NOK it costs for an editor's assistant to perform the job. This reduces the costs of logging by 57-58%, as also found in the next table.

Manual vs Software	Number of Work Days (7,4-8 hrs)	Number of Clips Synchronized	Salary or Cost (NOK)	Editing Suite Rental (NOK)	Total Cost (NOK)	Savings (NOK)
Editor's Assistant Norway	18	1 500	28 000	7 000	35 000	12 500
Praqo Logging System Norway	Minutes per Day	1 500	22 500	XX	**22 500**	**36%**
Editor's Assistant U.S.	18	1 500	13 900	7 000	20 900	11 900
Praqo Logging System U.S.	Minutes per Day	1 500	9 000	XX	**9 000**	**57%**
Editor's Assistant Norway	45	3 700	70 000	18 000	88 000	32 500
Praqo Logging System Norway	Minutes per Day	3 700	55 500	XX	**55 500**	**37%**
Editor's Assistant U.S.	45	3 700	34 600	18 000	52 600	30 400
Praqo Logging System U.S.	Minutes per Day	3 700	22 200	XX	**22 200**	**58%**

In fact, the costs of the overall production are lowered even more as with the Praqo Logging System there is no need to purchase a script log writing program (approximately 3500 NOK traditionally, free with Praqo), a hardware clapperboard (up to 10 000 NOK traditionally, free digital app with Praqo), or a dailies creator and dailies distribution program (around 900 NOK traditionally, free with Praqo). Praqo customers only pay for the synchronization of their files. Praqo will embrace all these functionalities so the costs associated with purchasing the aforementioned programs and equipment will be significantly reduced by at least 14 400 NOK for the customer.

Additional Economic Benefits. This business model is also strong in other ways as well. It ensures repeat business, as the customer must pay each time they wish to have files synchronized, which must be done for every film and television show aired. Payment will typically be arranged at the time of order. The number of customers that Praqo will be able to handle at one time is essentially limitless - the company only requires enhanced server

capabilities for larger quantities of synchronizations, and this can be obtained through online server providers such as Amazon Cloud Services or IBM Business Server. These costs are already taken into consideration in the later financial model.

Appendix I: Calculations for the Norwegian Film and television industry

Each Synchronization costs 15 NOK

The average film requiring an approximate average of 1500 synchronizations for 1,5 hours of filming.

15 NOK x 1500 synchronizations = 22 500 NOK per film

The average TV show would require an approximate average of 750 synchronizations for 45 minutes of filming.

15 NOK x 750 synchronizations = 11 250 NOK per episode

Film Industry: 327 films x 22 500 NOK = 7 357 500 NOK

Television Industry: 540 episodes x 11 250 NOK = 6 075 000 NOK

Television Industry + Film Industry: 7 357 500 NOK + 6 075 000 NOK = 13 432 500 NOK

Total Potential Norwegian Film & Television Industry: 13 432 500 NOK per year

Appendix J: Calculations for the U.S. Film and television industry

Each Synchronization costs 15 NOK

The average film requiring an approximate average of 1500 synchronizations for 1,5 hours of filming.

6 NOK x 1500 synchronizations = 9 000 NOK per film

The average TV show would require an approximate average of 750 synchronizations for 45 minutes of filming.

6 NOK x 750 synchronizations = 4 500 NOK per episode

Film Industry: 8 700 films x 9 000 NOK = 78 300 000 NOK

Television Industry: 39 600 episodes x 4 500 NOK = 178 200 000NOK

Television Industry + Film Industry: 78 300 000 NOK + 178 200 000 NOK = 256 500 000 NOK

Total Potential U.S. Film & Television Industry: 256 500 000 NOK per year

Appendix K: Competitor Comparison Chart

Company	**Praqo**	**ScriptT Systems LLC**	**Square Box Systems LTD**	**Production/Post-production Companies**	**Drylab R&D**	**Red Giant**
Country	Norway	US	UK	International	Norway	US
Product name	**Praqo Logging System**	**ScriptE**	**CatDV**	**Traditional logging by Editor's assistant**	**Dailies Viewer**	**Plural Eyes**
Price	15NOK per logged clip	NOK 3500,00	NOK 2650,00	NOK 1560,00	NOK 490,00	NOK 1155,00
Area of expertise	Automatic dailies creation	Script log software applications.	Video Management Software	Manual Dailies Management	Dailies creation and distribution	Audio synchronization
Main Functions						
Organizes and synchronizes image recordings and sound recordings.						
Manages diverse reports and information.						
Produces dailies and distributes them via the internet.						
Provides a program for integrated script logging management						
Transfers data into the editing system.						

Utilizes cloud computing for automatic synchronization & distribution						

Appendix L: Action Plan

Year	First Quarter	Second Quarter	Third Quarter	Fourth Quarter
2013	**xx**		**Development**	
			Hire Two Additional Developers Continue Developing Prototype Create Website Interface	Complete Prototype Begin Beta-Testing Apply for U.S. Patent
2014	**Development**		**First Year of Operations**	
	Beta Testing Apply for E.U. Patent Initiate Kickstarter	Beta Testing Rent Offices in Oslo	Launch Product in Norway Norwegian Film Festival Hire Salesperson for Norway Investment Required - Year 1 Throw Launch Party	Begin Search Engine and Linked-In Advertising Oslo Film Festival
2015	**First Year of Operations**		**Second Year of Operations**	
	Gothenburg Film Festival	Secure Partnership with Den Norske Filmskolen Rent Offices in Los Angeles	Launch Product in U.S. Hire Salesperson for U.S. Investment Required - Year 2 Norwegian International Film Festival	Throw U.S. Launch Party Hire One Additional Developer SMPTET Trade Show Oslo Film Festival
2016	**Second Year of Operations**		**Third Year of Operations**	
	Manage Norwegian & U.S. Operations SXSW Trade Show Gothenburg Film Festival	Manage Norwegian & U.S. Operations NAB Trade Show	Manage Norwegian & U.S. Operations Hire U.S. Salesperson Norwegian Film Festival	Manage Norwegian & U.S. Operations SMPTET Trade Show Oslo Film Festival
2017	**Third Year of Operations**		**Fourth Year of Operations**	
	Gothenburg Film Festival SXSW Trade Show	NAB Trade Show	Norwegian Film Festival	Hire One Additional Developer Oslo Film Festival SMPTET Trade Show
2018	**Fourth Year of Operations**		**Fifth Year of Operations**	
	Gothenburg Film Festival SXSW Trade Show	NAB Trade Show		
2018	**Fifth Year of Operations**		**XX**	
	Gothenburg Film Festival SXSW Trade Show	NAB Trade Show		

Appendix M: Further Financial Calculations

Pro Forma Profit & Loss	**NOK**	**NOK**	**NOK**	**NOK**	**NOK**
	FY 2015	FY 2016	FY 2017	FY 2018	FY 2019
Sales	1 912 500	4 931 250	8 261 250	14 726 250	23 621 250
Direct Cost of Sales	248 625	641 063	1 073 963	1 914 413	3 070 763
Developers Payroll	850 500	1 184 000	1 230 000	1 585 000	1 651 000
Total Cost of Sales	1 099 125	1 825 063	2 303 963	3 499 413	4 721 763
Gross Margin	813 375	3 106 188	5 957 288	11 226 838	18 899 488
Gross Margin %	42.53%	62.99%	72.11%	76.24%	80.01%
Operating Expenses					
Sales and Marketing Expenses					
Sales and Marketing Payroll	749 604	1 327 000	1 960 500	2 059 200	2 160 735
Advertising/Promotion	349 400	210 000	252 000	302 400	362 880
Travel Expenses	9 500	14 000	16 500	20 000	23 800
Total Sale and Marketing Expenses	1 108 504	1 551 000	2 229 000	2 381 600	2 547 415
Sales and Marketing %	57.96%	31.45%	26.98%	16.17%	10.78%
Management Expenses					
Management Payroll	750 000	787 000	826 000	868 000	910 000
Rent and Utilities	62 400	156 000	156 000	156 000	156 000
Payroll Taxes	564 120	698 040	729 720	837 090	875 075
Norinnova Expenses	12 000	12 000	12 000	12 000	12 000
Patent Annual Fees	6 250	12 500	12 500	12 00	12 500
Total Management Expenses	1 394 770	1 665 540	1 774 020	1 925 280	2 007 249
Management %	72.93%	33.78%	21.47%	13.07%	8.50%
Other Expenses					
Broadband Internet	12 000	12 000	12 000	12 000	12 000
Equipment (Computers and Servers)	10 000	10 000			
Total Other Expenses	22 000	22 000	12 000	12 000	12 000
Other %	1.15%	0.45%	0.15%	0.08%	0.05%
Total Operating Expenses	2 525 274	3 238 540	4 015 020	4 218 880	4 566 664
Profit Before Interest and Taxes	(1 711 899)	(132 353)	1 942 268	6 907 958	14 332 824
EBITDA	(1 711 899)	(132 353)	1 942 268	6 907 958	14 332 824
Net Profit	(1 711 899)	(132 353)	1 942 268	6 907 958	14 332 824
Net Profit/Sales	**-89.51%**	**-2.68%**	**23.51%**	**46.91%**	**60.68%**

Pro Forma Cash Flow	NOK	NOK	NOK	NOK	NOK
Cash Received	FY 2015	FY 2016	FY 2017	FY 2018	FY 2019
Cash from Operations					
Cash Sales	1 912 500	4 931 250	8 261 250	14 726 250	23 621 250
Subtotal Cash from Operations	1 912 500	4 931 250	8 261 250	14 726 250	23 621 250
Additional Cash Received					
Sales Tax, VAT, HST/GST Received	0	0	0	0	0
New Current Borrowing	0	0	0	0	0
New Other Interest Free Liabilities	0	0	0	0	0
New Long-term Liabilities	0	0	0	0	0
Sales of Other Current Assets	0	0	0	0	0
Sales of Long-term Assets	0	0	0	0	0
New Investment Requested	1 800 000		0	0	0
Subtotal Cash Received	3 712 500	4 931 250	8 261 250	14 726 250	23 621 250
Expenditures	FY 2015	FY 2016	FY 2017	FY 2018	FY 2019
Expenditures from Operations					
Cash Spending	3 624 399	5 063 603	6 318 983	7 818 293	9 288 427
Bill Payments	0	0	0	0	0
Subtotal Spent on Operations	3 624 399	5 063 603	6 318 983	7 818 293	9 288 427
Subtotal Cash Spent	3 624 399	5 063 603	6 318 983	7 818 293	9 288 427
Net Cash Flow	88 101	(132 353)	1 942 268	6 907 958	14 332 824
Cash Balance	**529 101**	**396 749**	**2 339 016**	**9 246 974**	**23 579 797**

Pro Forma Balance Sheet	NOK	NOK	NOK	NOK	NOK
Assets	**FY 2015**	**FY 2016**	**FY 2017**	**FY 2018**	**FY 2019**
Current Assets					
Cash	529 101	396 749	2 339 016	9 246 974	23 579 797
Other Current Assets	6 000	6 000	6 000	6 000	6 000
Total Current Assets	535 101	402 749	2 345 016	9 252 974	23 585 797
Long-term Assets					
Long-term Assets	0	0	0	0	0
Accumulated Depreciation	0	0	0	0	0
Total Long-term Assets	0	0	0	0	0
Total Assets	535 101	402 749	2 345 016	9 252 974	23 585 797
Liabilities and Capital	**FY 2015**	**FY 2016**	**FY 2017**	**FY 2018**	**FY 2019**
Current Liabiities					
Accounts Payable	0	0	0	0	0
Current Borrowing	0	0	0	0	0
Other Current Liabilities	250 000	250 000	250 000	250 000	250 000
Subtotal Current Liabilities	250 000	250 000	250 000	250 000	250 000
Long-term Liabilities	0	0	0	0	0
Total Liabilities	250 000	250 000	250 000	250 000	250 000
Paid-in Capital	2 973 000	2 973 000	2 973 000	2 973 000	2 973 000
Retained Earnings	(976 000)	(2 687 899)	(2 820 252)	(877 984)	6 029 974
Earnings	(1 711 899)	(132 353)	1 942 268	6 907 958	14 332 824
Total Capital	285 101	152 749	2 095 016	9 002 974	23 335 797
Total Liabilities and Capital	535 101	402 749	2 345 016	9 252 974	23 585 797
Net Worth	**285 101**	**152 749**	**2 095 016**	**9 002 974**	**23 335 797**

Sales Forecast					
	FY 2015	FY 2016	FY 2017	FY 2018	FY 2019
Unit Sales					
Films Synchronized Norway	47	56	73	102	143
TV Shows Synchronized Norway	76	91	118	165	231
Films Synchronized U.S.	0	109	218	435	724
TV Shows Synchronized U.S.	0	488	975	1 950	3 300
Total Unit Sales	123	744	1 384	2 652	4 398
Unit Prices (NOK)					
Per Synchronized Film	22 500	22 500	22 500	22 500	22 500
TV Shows Synchronized Norway	11 250	11 250	11 250	11 250	11 250
Films Synchronized U.S.	0	7 500	7 500	7 500	7 500
TV Shows Synchronized U.S.	0	3 750	3 750	3 750	3 750
Sales (NOK)					
Films Synchronized Norway	1 057 500	1 260 000	1 642 500	2 295 000	3 217 500
TV Shows Synchronized Norway	855	1 023 750	1 327 500	1 856 250	2 598 750
Films Synchronized U.S.	0	817 500	1 635 000	3 262 500	5 430 000
TV Shows Synchronized U.S.	0	1 830 000	3 656 250	7 312 500	12 375 250
Total Sales	1 912 500	4 931 250	8 261 250	14 726 250	23 621 250
Direct Unit Costs (NOK)					
Films Synchronized Norway	2 925	2 925	2 925	2 925	2 925
TV Shows Synchronized Norway	1 462 ,50	1 462, 50	1 462, 50	1 462, 50	1 462, 50
Films Synchronized U.S.	0	975	975	975	975
TV Shows Synchronized U.S.	0	487,50	487,50	487,50	487,50
Direct Cost of Sales (NOK)					
Films Synchronized Norway	137 475	163 800	213 525	298 350	418 275
TV Shows Synchronized Norway	111 150	133 088	172 575	241 313	337 828
Films Synchronized U.S.	0	106 275	212 550	424 125	705 900
TV Shows Synchronized U.S.	0	237 900	475 313	950 625	1 608 750
Subtotal Direct Cost of Sales	248 625	641 063	1 073 963	1 914 413	3 070 763

Personnel Plan	NOK	NOK	NOK	NOK	NOK
	FY 2015	FY 2016	FY 2017	FY 2018	FY 2019
Development Personnel (Full and Part Time)					
Benjamin Kehlet (Part-time Developer)	81 000	81 000	81 000	81 000	81 000
Anders Bakken (Part-time Developer)	81 000	81 000	81 000	81 000	81 000
Additional Full-time Developers	405 000	627 000	658 000	895 000	939 000
Direct and Indirect Employee Costs	283 500	395 000	410 000	528 000	550 000
Subtotal	850 000	1 184 000	1 230 000	1 585 000	1 651 000
Sales and Marketing Personnel (Full Time)					
Jessica Green	500 004	525 000	551 000	579 000	607 000
U.S. Salespeople	0	360 000	756 000	793 800	833 490
Direct & Indirect Employee Costs	249 600	442 000	653 500	686 400	720 245
Subtotal	749 604	1 327 000	1 960 500	2 059 200	2 160 735
Management Personnel (Full Time)					
Jannik Kehlet	500 004	525 000	551 000	579 000	607 000
Direct and Indirect Employee Costs	249 996	262 000	275 000	289 000	303 000
Subtotal	750 000	787 000	826 000	868 000	910 000
Total People	6	9	9	10	10
Total Payroll	**2 350 104**	**3 298 000**	**4 016 500**	**4 512 200**	**4 721 735**

Appendix N: Previous Post Production Acquisitions

Year of Acquisition	Operating Company	Industry Operations	Acquired Company	Competencies Added
2013	Global Eagle Entertainment	Worldwide leader for in-flight entertainment programming	Post Modern Group LLC	Provider of video production, post production, & digital content delivery for TV, films, commercials, home video, live news, & in-flight entertainment
2013	Infostrada	Global provider of sports media, interactive, and creative technology services	MOG Technologies	Develops innovative digital video ingest products and media file technology, creating digital and cloud-based workflows to broadcasters and content creators
2013	Slate Media Group's PostWorks New York	Leading independent provider of post-production services to the film and television industries	Mega Playground	Post production facility providing capacity to New York operations
2012	Prasad Corporation	India's largest provider of integrated services catering to film & video production, post production, distribution, and exhibition	Digital Film Technology Munich	SCANITY & FLEXXITY product groups - Film scanning and digital dailies management products
2011	Technicolor	Provides digital services such as high end visual effects, animation, and postproduction services to broadcasters worldwide	LaserPacific	Post production assets and personnel
2011	Digital Vision	World leader in grading and restoration solutions for major movie studios, television networks, and post production facilities	Image Systems	Major player in motion analysis and film scanning for post production
2010	H.I.G. Capital/Telecorps	Leader in production & post-production equipment rental and related services to brodcast, cable, and feature film industries,	Laser Pacific	Emmy-award winning company providing innovative technical solutions to post production
2010	Reliance MediaWorks (formerly Adlabs)	Has a dominant and comprehensive presence in Film Services such as Motion Picture Processing, Visual Effects, Film Restoration, Image Enhancement, etc.	ilab UK Ltd	Dailies management house of choice for the BBC. One of two film processing facilities in London's Soho, offering dedicated film and media services such as post production to broadcasters and studios.
2005	Autodesk	World's leading software and service company for the building, manufacturing, infrastructure, digital media, and wireless data service fields	Colorfront	Leading developer of color correction technology for film studios and digital film laboratories. Goes on to create Emmy-winning digital dailies solutions in 2012.