



LUND UNIVERSITY
School of Economics and Management

Theoretical Reflections

“Using effectual reasoning to commercialize university research”

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Table of Contents

| | |
|---------------------------------|----|
| Abstract..... | 3 |
| Introduction..... | 4 |
| Problem..... | 6 |
| Frame of reference..... | 8 |
| Method..... | 10 |
| Project..... | 10 |
| The Shapeyard Team..... | 11 |
| Limitations..... | 11 |
| Analysis/Results..... | 12 |
| Conclusions | 18 |
| Suggested further research..... | 18 |
| References..... | 20 |

Abstract

The Shapeyard project was an attempt to commercialize a piece of university research by two academics at Lund University. Their algorithm that they developed together allowed for the customization of furniture using morphological patterns found in nature as a design concept. The idea was brought to a group of students completing their Masters of Science in Entrepreneurship degree in order to gain business insight about how to take this idea to market.

The entrepreneur team attempted to use reasoning known as “effectuation” to bring the algorithm to market because of the limited resources available to them. However, this method was at odds with the preconceived strategy that the researchers had imagined. The researchers wanted to use methods close their own work while the entrepreneurs wanted to attempt to turn the algorithm into a product that was ready for market. The entrepreneur team also encountered the problem of the “inventor's dilemma.”

The ensuing process of commercialization was documented using a method called autoethnography that explains the conflicts that occurred.

Introduction

Technology is one of the driving forces in modern society. Some form of technology pervades every single aspect of our lives: communication, sanitation, health, food, transport, education, entertainment and so on. At some point all of that technology had to be commercialized in order for us to use it. Technology-based companies provide us with the means of living in the modern era and are also very influential in the sense that they employ an ever-increasing number of people.

The business world and the economy as we experience it today did not come directly out a laboratory, but through evolution over time. Business ideas come to fruition in a number of ways. Sometimes they might be planned for years in advance, but other times the idea will simply come out of every day inspiration for an entrepreneur. However, when it comes to high technology innovations, the way we commercialise research is becoming more and more important. Often problems that industry experience have already been solved by scientists who simply don't know how to reach their target customers (Bryskhe, K., personal communication, March 9, 2011).

Universities are the centre of knowledge in developed societies and often contain great minds and great resources that are able to achieve results that haven't otherwise been reached. There is, however, a barrier between the market and the knowledge centre, which is a problem because high technology start ups represent an economic driving force. (Kassicieh et al., 1997, p. 248)

University spin-offs, using research from various parts of a higher educational facility, can be produced by bringing a new technology to market that helps solve the problems in industry or for consumers. Entrepreneurs coming together with academics can take solutions directly from the source to the market. High technology ideas in biomedicine, physics, chemistry, electronics, engineering, design and more are being taken at an increasing rate to the market for commercialization.

The problem with taking university research and making it into a business is that the key knowledge is often produced by people who have no desire and/or the required skills to engage in business: academics.

Kassicieh et al. found that there is a huge lack of people with the right characteristics in a research setting to commercialize technology effectively (1997, p. 255). Therefore, in order to take a technological breakthrough and make it useful for the market a 'surrogate entrepreneur' is often

needed.

Therein lies a conflict that stops research reaching the market in the form of a product: entrepreneurs and researchers are very different types of people. For a team and a business to reach fruition, there needs to be a certain level of unity within the team the goals of the team need to be aligned.

Researchers need to be able to let go of their product and let the entrepreneur hired to bring the product to market take control and use his/her methods to commercialise the technology.

Problem

Commercialization of an idea, particularly one that requires specific resources, such as a patent or piece of high technology, is a path riddled with pitfalls for entrepreneurs. Bozeman (2000, p.627) said that “in general, the process of commercializing intellectual property is very complex, highly risky, takes a long time, cost much more than you think it will, and usually fails.”

Great pieces of research with high potential fail to reach the market for a number of reasons: there might be no market, no resources or perhaps there are problems within the team. Using a resource based view (Barney, 1991) in conjunction with the mindset of scientists and researchers, there is the reality that many projects will never make it to customers. While they have the intellectual resources to achieve and create a technical advantage, they often lack the business acumen and financial resources needed to convert this into a sustained advantage.

Researchers can be stereotyped as perfectionists: they want to bring their piece of research to the exact point where they imagined it, whether or not it is possible or viable commercially. (Histrup, M, Personal communication, Dec. 8, 2010). Often a researcher will solve a problem that they have found and assume that many others have the same need. Based on this assumption, they work toward a specific goal in mind. They are using what Sarasvathy (2001) calls causation: trying to achieve a desired goal, often far removed from the current circumstances. However it is often unclear whether other people have the same exact needs.

As previously stated there is a problem in this approach because researchers often know what they want, but have no means or expertise to get there. Entrepreneurs that come to help the researchers find a way to make the research into a business often come with the opposite mindset, desiring to get the product out on to the market for test runs and feedback, which can be used to hone the idea. This, by Sarasvathy's definition is the effectuation approach and is at odds with the traditional academic mind set.

Part of the clash between entrepreneurs and researchers is that the inventors of a technology often feel like it is their baby (Histrup, M, Personal communication, Dec. 8, 2010) and they do not want to let the product out onto the market until it has reached the desired level of perfection. Often however this leads in a direction where most customers are not to be found. Instead the focus is on a very specific target market with needs not general to a large group of people.

The challenge then for the entrepreneurs and the researchers is to come to a consensus about what

the direction of the business will be. Someone must take the lead, make the decisions and find ways of implementing the strategy.

Taking the lead and gaining the trust required for active researchers to allow their invention/research to be used in a specific way different to their original imagination is difficult because they are in new territory and feel out of their depth. Suddenly they do not have unlimited time and free resources paid for by the tax payer, but must work within specific boundaries. While diversity among teams can be good in some respects — for example in respect to skills and networks held within the organisation — it can also distract the team from its ability to find a direction and prioritize its goals. (Ancona & Caldwell, 1992, p. 337)

This paper will discuss the problems experienced by the entrepreneurs, who team up with researchers who have an idea to commercialize, bringing it to the market with little resources in an effectual process.

Frame of reference

Universities are a great environment in order to take knowledge from the source, scientists and researchers, to the market where people have problems that need solving. They are the place where many technological opportunities are created: “Technological opportunities come from several sources: the results of research, technology transfer contracts, education and from other specialized services,” (Aguirre, 2006, p.160).

Technology transfer is defined by Bozeman as the “the movement of know-how, technical knowledge, or technology from one organizational setting to another.” (2009, p. 629). A tool to be used for commercialization, as such, is a configuration between knowledge and technology where one is not valuable without the other.

An entrepreneur can take a technology to market in a number of ways, some which involve long lead times and years of planning and money and some that just try to approach the market with the resources in hand and see what happens. This is the basis of Sarasvathy's theory on effectuation and causation (2001).

“Causation processes take a particular effect as given and focus on selecting between means to create that effect. Effectuation processes take a set of means as given and focus on selecting between possible effects that can be created with that set of means.” (Sarasvathy, 2001, p. 245).

This theory is relevant to the topic because of the distinction between a causal, research-based perspective — where unlimited resources, including time, are taken for granted — and an effectual, entrepreneurial perspective, where market need and resource constraints are considered as top priorities.

Deciding early on what you will do and how you will achieve it is integral to the survival of a business. If you wait too long for resources or try to shoot too high, you won't succeed.

“Prioritizing what markets to focus our efforts on and how to use our limited time and money were the most important early decisions taken when putting this business together. The outcome [of these decisions] has made an impact upon the results we have been able to achieve up to now, particularly with reference to demonstrating proof of concept and proof of market to potential investors.” (Vohora et al.,2004, p. 156).

However it is precisely that; the task of prioritizing markets and goals, that hinders a team made of

researchers and entrepreneurs, because they are so different (Ancona & Caldwell, 1992). The researchers want to continue to improve their product without letting it go to market for the ultimate test, continually adding new functionality, which might not be in the interests of a desirable target market.

Often a researcher may be seeing him/herself in the mirror and will try to make the product for people with their own specific needs, but “the trajectory of product improvement can often 'overshoot' the needs of less demanding customers. This would not be a concern if the majority of customers also valued the enhanced products. But often the enhancements come at a cost and with features that mainstream customers are not willing to pay for. In other words, the trajectory of product improvements is steeper than the rate of increase of demand for product capability for all but marginal customers. Hence companies are driven 'up-market'...Of course, there are likely to be higher margins up-market where there is a greater need for the sustaining innovation. The problem is that by going up-market, the product's cost structure may change in such a way that it becomes much harder for the firm to profitably compete down-market for other customers who do not value, and therefore, will not pay for the improvements. (Alles, 2002, pp. 241-242).

Despite the desires of researchers to continually upgrade their product without testing it in the market, the reality of a business is that you need to solve a problem and sell products to real people. That can often lead to a state where you are constantly in the idea phase, never reaching the market.

Vohora et al. call this part of the commercialization process the “opportunity framing phase” where the idea is taken through a check list to see if there is a chance to exploit the technology. (2004, p. 151).

If a project never takes the step to stop product development and move forward with the current technology, testing it on the market, it will forever stay in this phase.

Method

This paper is an analysis of the experiences gained during the Masters of Science in Entrepreneurship at Lund University during the 2010-2011 programme.

By comparing the theory presented to students in the course and additional research to the personal learning that we gained during the commercialization of our business idea for the Entrepreneurial Project unit, I produce a learning outcome.

During the course of the commercialization of the business idea, a weekly learning journal documenting progress and challenges was kept. In the learning journal a log of what was done each week was logged as well as the interpersonal relationships between group members and our own personal goals from my perspective.

The comparison between the learning journal and the real life experiences from the commercialization project versus the extant theory will be the basis of my analysis. This form of analysis is called autoethnography and is the study of my own experience through my own eyes during the process of commercialization. My work is by Anderson's definition an analytic autoethnography because I:

1. am a complete member of the research field , and I include:
2. analytic reflexivity,
3. narrative visibility of the researcher's self,
4. dialogue with informants beyond the self, and
5. commitment to theoretical analysis. (Anderson, 2006, p. 378)

Project

During the programme, the project "Shapeyard" (formerly known by it's working title "Bespoke Products") was created to commercialize research that had been selected for students to use as the basis of a business idea by the Lund University branch LU Innovation. Shapeyard is a mass-customization home durables company based on an algorithm used to test the structural stability of furniture whose design is based on natural patterns. The algorithm also produces cutting drawings that are used in conjunction with computer-numerical-controlled machinery that cuts wood, metal, glass or various other materials. In effect, the algorithm and program allow you to create any kind of furniture in any design incorporating morphologies utilizing the full power of modern

manufacturing technology without the need to use large-series production runs.

For the commercialization of the algorithm, the team was given legal advice by Lund University's branch set up to facilitate the commercialization of research, LU Innovation. Limited financial resources were also given to the team in order to help it in its initial phase of the start up. An effectuation process was chosen by the entrepreneur team because there were very few resources to work with for a project of this scope.

The Shapeyard Team

The team consisted of five members: two researchers, Researcher One and Researcher Two; and three entrepreneurship students, called Team Member One, Two and Three. The nationalities of the researchers was German and Swedish. The nationalities of the team members was German, Australian and Icelandic.

Limitations

The limitations of this method are that I rely on my own experience through my own eyes and cultural background. I can never get out of my own skin and thoughts and therefore my experience is one-sided. Post-rationalization also plays a factor in the analysis of the journal, because though there is raw data from that time when the incident happened, I have had time to consider the meaning of the actions and occurrences.

Cultural background in particular is relevant in our group given that we had four different nationalities and languages in one team. In the team we had one Australian, two Germans, one Swede and one Icelander. Due to this cultural mix, many cultural cues can be misinterpreted and therefore my analysis of the situation is thus limited.

Analysis/Results

Throughout the entrepreneurial process of commercializing the algorithm that the researchers brought to us, I documented the different ways that we would try to use it for the market. Originally we had grand ideas of bringing it to market in a flurry of ways including making specialized cutlery and crockery for hotels whilst fitting out shop interiors with specialized shelving and decorative pieces.

The process of coming to a set category to work towards with clear aims took more than eight weeks and even then it wasn't complete. This was the basis and the nucleus of the problem for commercializing university research using an effectuation approach.

“We are still in the phase of trying to choose exactly what we want to produce, but we have narrowed it down to furniture. Researcher One seems to be looking to move in a different direction to us. He imagines a company that makes things for the home in many different categories while the entrepreneur students all agree on sticking just to shelving for the moment. Choosing one category to begin with will be key in establishing a brand and also establishing legitimacy.”* (Mullett, 2010, Journal entry 1).

Over the next weeks after the first week journal entry was recorded, a number of meetings were held, chiefly with the intent to bring the team to a specific direction for production. The entrepreneur students were intent on pursuing a strategy that had a large market with high profitability. Davidsson, P., P. Steffens, et al. found that a company that had high profitability from the beginning was the key to success, rather than waiting for high volumes of clients to bring you a good margin (2009). We were interested in this sort of strategy, by following the production of shelves because they have a high margin and there is a large amount of producers in Sweden that can make them, giving us good bargaining power in negotiations. However what we encountered was Magnus Histrup's “inventor's dilemma.” The researchers were aware from the beginning that the program and algorithm were not capable of making what we were talking about, but imagined that they would hang on to their idea until all functionality had been added, regardless of the needs of the market.

“We sought to address the two biggest problems that we have encountered to date: choosing a concrete direction for our launch and also forming a structure by which we can make

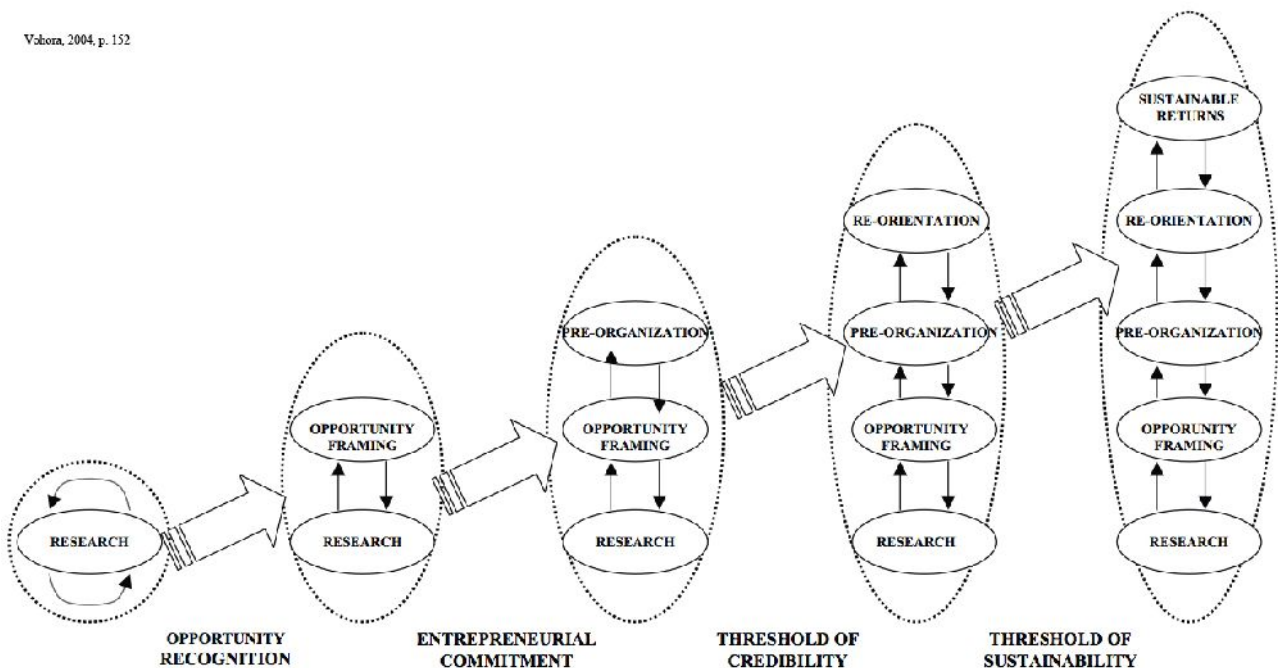
* Researchers and members of the team have been renamed to protect their identities in this public document. Researcher One, Researcher Two, Team Member Two and Team Member Three represent the other people in the Shapeyard team.

decisions.

Up until this point there has been a lot of consideration about how to start: do we go for online, or a shop front, do we use one material for the furniture in many product categories or do we use one category with many materials...The entrepreneurship team are beginning to wonder about Researcher One's role in the team. He is often looking to control all important decisions, but is often absent.” (Mullett, 2010, Journal entry 2).

What we were experiencing in the team was deadlock because we were not able to reconcile the points of view between the entrepreneurs and the researchers. The entrepreneurs had an effectuation mode in mind while the researchers were more intent on focusing on one particular goal, however lofty and impossible to reach. This problem in our group is somewhat further proof of Ancona & Caldwell's finding that a stratified group will have problems finding and clarifying goals to work towards.

What happened over the first months of our collaboration is signified in Vohora et al's diagram below. Because we were unable to clarify our goals and decide on a product category, we were unable to get from the second to the third stage.



Of course with the lack of direction we were also unable to cross the threshold of credibility, which is required for customers to make purchases from you.

The entrepreneur team wanted to use an effectuation style when commercialising the algorithm,

producing something that could actually be made and selling it wherever possible in order to gather resources and put ourselves out there on the market for real feedback. Shelving seemed to be the best way to start.

“After a collective meeting with our mentors and the researchers and subsequent meetings with my personal mentor, Magnus, we have come to the conclusion that we need to move in a direction: any direction. There is nothing worse than sitting there waiting for a bolt of inspiration when you are rooted to the spot. We have wanted to do one product category (decorative shelving) from the side of the entrepreneurs because it would allow us to gain some expertise in the fields of production and technical things...we told them [the researchers] that we want them to make a decision and we will stick to it. If it doesn't work then we can move in another direction, but we need to be moving somewhere. Researcher One told us it would take a week to make a decision and in the end he and Researcher Two came back with...five product categories including “fruit bowls.” Nothing has ever been said about fruit bowls in the past and we told him anyway that we need one category. By choosing five categories, he in fact did not make a decision, leaving us in the same position as before.” (Mullett, 2011, Journal 4).

The entry from journal 4 shows clearly how the entrepreneurs were looking for an effectual approach; to actually produce and sell something out of the limited resources (including knowledge) that we had, but the researchers were clearly more focused on causation. This was a source of conflict for the team because we had different time lines and we also had different goals and ambitions.

Early on was the perfect time to check our assumptions with each team member to see if there were any misunderstandings between us. This was the advice given to us during a lecture by Lisbeth Böhm (personal communication, Jan. 11, 2011) who said that in team dynamics it is always important to ask the hard questions at the beginning to avoid future problems that are based on false assumptions. After a proper discussion with the entire team we did decide on some goals and a common time line and we made more progress.

Though it was already clear to us in the management team that we should use an effectuation method to commercialize the product, finding the first sales and building on them, the researchers still were looking at using a causation method with a massive and elaborate launch with a shop front

and various product lines. Despite our pleading to be more flexible they still wanted to launch with five categories and do it after two years. For us this was infeasible: not only did we have a limited stay in Sweden if the business didn't do well, but the window of opportunity would surely close if we waited until the end of 2012 to launch. The attitude was a manifestation of Magnus Histrup's Inventor's Dilemma.

“They had the 'inventor's dilemma' where the researchers want to hang onto their baby. Instead of taking the risk and submitting it to the test of the market, they instead take the safe (and unprofitable) route of constantly pushing back the launch and adding new functionality. The problem with adding new functionality is that it is often unclear which things need adding and which are not useful at all.” (Mullett, 2011, Journal 5).

Soon after our unproductive meeting with the researchers, we had our first board meeting, which included a member from LU Innovation, the arm of the university charged with facilitating the creating of research-based university spin-off start ups, Researcher One and the mentors of Team Members Two and Three. The entrepreneur team presented our vision for the start up of the company and the board was sympathetic to our views that we should get a product out there and launched.

“The process for making decisions is something that has dogged the project since the beginning because the researchers (namely Researcher One) are very single minded in their approach to the launch. They have the majority shares, but are not willing to make decisions. It was brought up at the beginning by [board member] Bengt, Team Member Two's mentor and [LU innovation's board member] Sven promptly reminded everyone that it was up to the board to make the big decisions and that the CEO (in this case the entrepreneur team) would give them options to choose from...Roll out strategy was discussed and it became clear that Researcher One and the team are in no way coming to a reconciliation on strategy. I feel like both Sven and Bengt were on our side in terms of getting something done, rather than waiting for the perfect launch. This echoes what Magnus said last week that its better to get some beta-launch than to wait and wait and wait and then miss the market window.” (Mullett, 2011, Journal 6).

By this time, we had realised that the Researchers represented what Parhankangas called agency risk. “Agency risk, in its turn, is a risk that is caused by separate and possibly divergent interests of

agents and principals. Agency risks may result in opportunism, shirking, conflicting objectives or incompetence.” (2007, p. 258). Because we were struggling to wrest control of the venture in terms of direction and in timing, the team was losing momentum and starting to break up. This was one of the outcomes of trying to use an effectuation approach with academics who had wanted to commercialize their idea. By trying to take the researchers' baby away and utilize it in a effectual process, we were being confronted by a protectionist stance.

Over time we managed to have somewhat of a breakthrough with Researcher One who realised that we might have some reasons behind making business in a step-wise fashion with small trials and learning along the way.

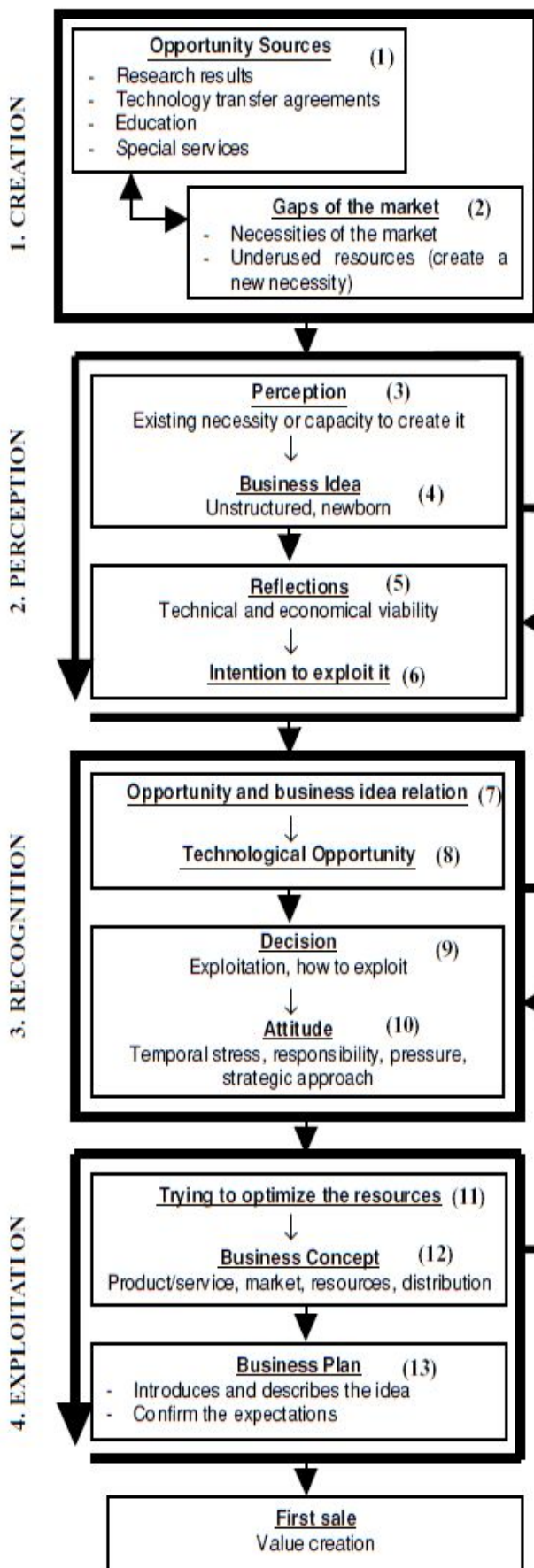
“We have convinced Researcher One to come up with some designs for some entry level pieces that would allow people to see our products and buy into the brand without taking too much risk...It was a move in the right direction of gaining some designs that will be good to send off as prototypes for producers...We will get the people who are interested in prototypes to build these things so we can get them out there into the market place.”

(Mullett, 2011, Journal 12).

The trend of us slowly convincing the researchers to let go and give us control over strategy came to a head in our penultimate board meeting when we all decided that they had failed in their commitments to the project and therefore we would work together to put things back on track if it were possible.

“It was really good to take back the responsibility from the researchers because their slow and reactive (instead of proactive) movements were really bringing down the team and as Sven said, 'they might kill the business before it begins.’” (Mullett, 2011, Journal 16).

Using Sarasvathy's effectuation approach with researchers is fraught with problems. This presents a peculiarity in her research: it is impossible at anyone one point to say that you will exclusively use an effectual or causal approach when commercializing something because one cannot realistically exist without the other. A business will always have some sort of limitations in terms of resources and the entrepreneurs will be limited in scope by their own imaginations also. Also, every goal that is set will have some sort of goals attached (i.e. a causal view) even if the current resources on hand are used.



In terms of the commercialization of university research, there are many points when an effectual process is simply not feasible. Though there is good reason to take a piece of research, find a use for it and test it on the market, there is also good reason to wait for external funding and refine the product to a certain level so it can compete on a particular market.

Ideally, a research idea would be screened for its abilities to take the market before being presented to entrepreneurs for commercialization. Also adequate resources need to be available so an effectual approach can be taken. These resources should include funding, contacts, mentors and complete access to the research itself. Entrepreneurs must also be given adequate personal incentives in order to make the research into a real business success. Once all of these conditions are satisfied, only then could a real and free effectual process take place.

Where the Shapeyard project got stuck on the “Opportunity metamorphosis process” diagram (left) was somewhere between step nine and step 12. (Aguirre, 2006, p. 161). We were simultaneously unable to decide how to exploit the technological opportunity and also we were unable to secure resources for that because of the middle-of-the-road strategy that we ended up with. Had we been more decisive and had a more clear strategy, we may have had the

ability to gather momentum and resources for the real commercialization of the algorithm.

Conclusions

During the course of the commercialization of the algorithm that would be the basis of Shapeyard the entrepreneur team worked hard to establish a strategy for bringing the idea to market. Many attempts were made to come to consensus vote with members of the research team on what was the best way to take the idea forward, but due to the possessive feeling that the researchers had over their own idea and their unwillingness to work with the current reality and submit it to the judgement of the market — as opposed to endlessly thinking up new ways to add functionality to create the perfect launch in year “x” — the idea never made it to the point where it should be used to incorporate a business. Using an effectuation process with researchers and their personalities was not suitable in the end.

Part of what Histrup describes as the “inventor's dilemma” will likely always be part of the problem when taking a piece of university research from the laboratory to the market via the use of surrogate entrepreneurs. Researchers will likely always stick to what they know, which by nature is a causation process.

If a project such as this, with such a scope as Shapeyard, were attempted again and it was the intention of the university for it to succeed, it would need to be given more resources. Prototyping furniture, travel expenses, sales, research, marketing and more could not be performed effectively given the limited resources available.

By giving more resources to the team for the necessary research, marketing and so on, the team would be able to come to more concrete conclusions about how to approach the sticky question of strategy when dealing with two very different groups of people: researchers and entrepreneurs.

Suggested further research

I would suggest for academic entrepreneurship researchers to look more deeply into how to match the personalities in teams made up of researchers and/or academics and entrepreneurs. By performing deeper research here, it will make it easier to predict how a team of people who don't know each other very well can succeed in bringing an idea to market.

The screening process for ideas should also be researched: what is the ideal time for an idea to be

brought to a group of entrepreneurs? What is the ideal time frame for the groundwork of the business until the time when the product can be launched? How long should year zero be ideally? How much resources are required for this idea to work?

Finally, the issue of the “inventor's dilemma” should be more deeply looked into and how this affects an idea's chances of reaching the market. How easy is it for researchers to give away control of their idea, or “baby”, and what affect does it have on their decision making process? What incentives should both the researchers and the entrepreneurs be given in order for this process to go ahead smoothly?

Early decisions can be incredibly important in shaping the future of the commercialization process, so this research would be of high value to universities that aim to increase the rate that their research reaches market.

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Shapeyard allows customers to design their own furniture using natural morphologies

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5 May 2011

shapeyard



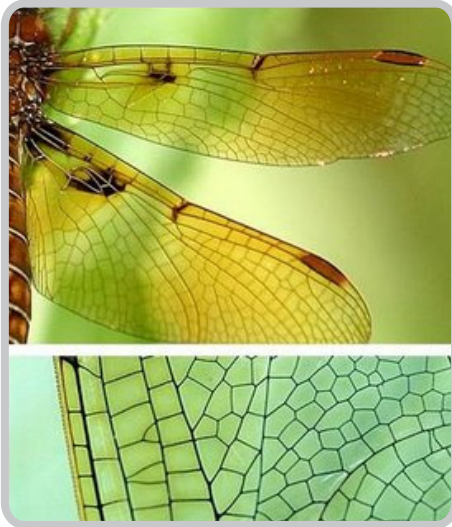
Table of Contents

| | |
|----|---------------------------|
| 1 | Executive Summary |
| 2 | Business Idea |
| 5 | Marketing Plan |
| 13 | Business Model |
| 15 | Organization |
| 19 | Implementation |
| 20 | Profitability & Financing |
| 21 | Risk Analysis |
| 24 | Appendix |
| 33 | References |



Executive Summary

Shapeyard allows customers to co-create their own unique shelving, tables, lighting and more using morphologies that exist in nature. The morphologies are not only aesthetic and functional, but they are by their definition very stable and can be individualised to a previously unseen level. Customers have the chance to co-create designs choosing the shape, material and size before production.



Shapeyard uses a proprietary software platform developed at Lund University that lets customers co-create consumer durables, making choices about the furniture so it fits their needs and desires. The customer's personal design has its aesthetic, functional and production parameters concurrently met, enabling on-demand production of one-off items. Often customers want a product that is not available on the market or they may have an irregular space in their house. Shapeyard solves these problems.

Going to a designer and/or carpenter to make something specifically for you is slow, daunting and very expensive. Shapeyard offers customisable products at a competitive price with rapid delivery. From start to finish, the production process can be as little as two weeks (see appendix I).

Customers co-create their furniture based on pre-designs in consultation with our staff. We plan to build a website that would allow customers to designs online (further consultation may be necessary). Due complex software, the web-based service is not immediately available.

Shapeyard customers get the chance to create one-off, unique and environmentally friendly items of furniture that they otherwise would not have had access to. Initially, Shapeyard generates revenues by direct sales, then through shopfronts and later via the Internet.

Regarding intellectual property, we announced our software in public, forfeiting our chances of a patent. We will keep the code a trade secret, continuing to develop it, making it harder for competitors to imitate.

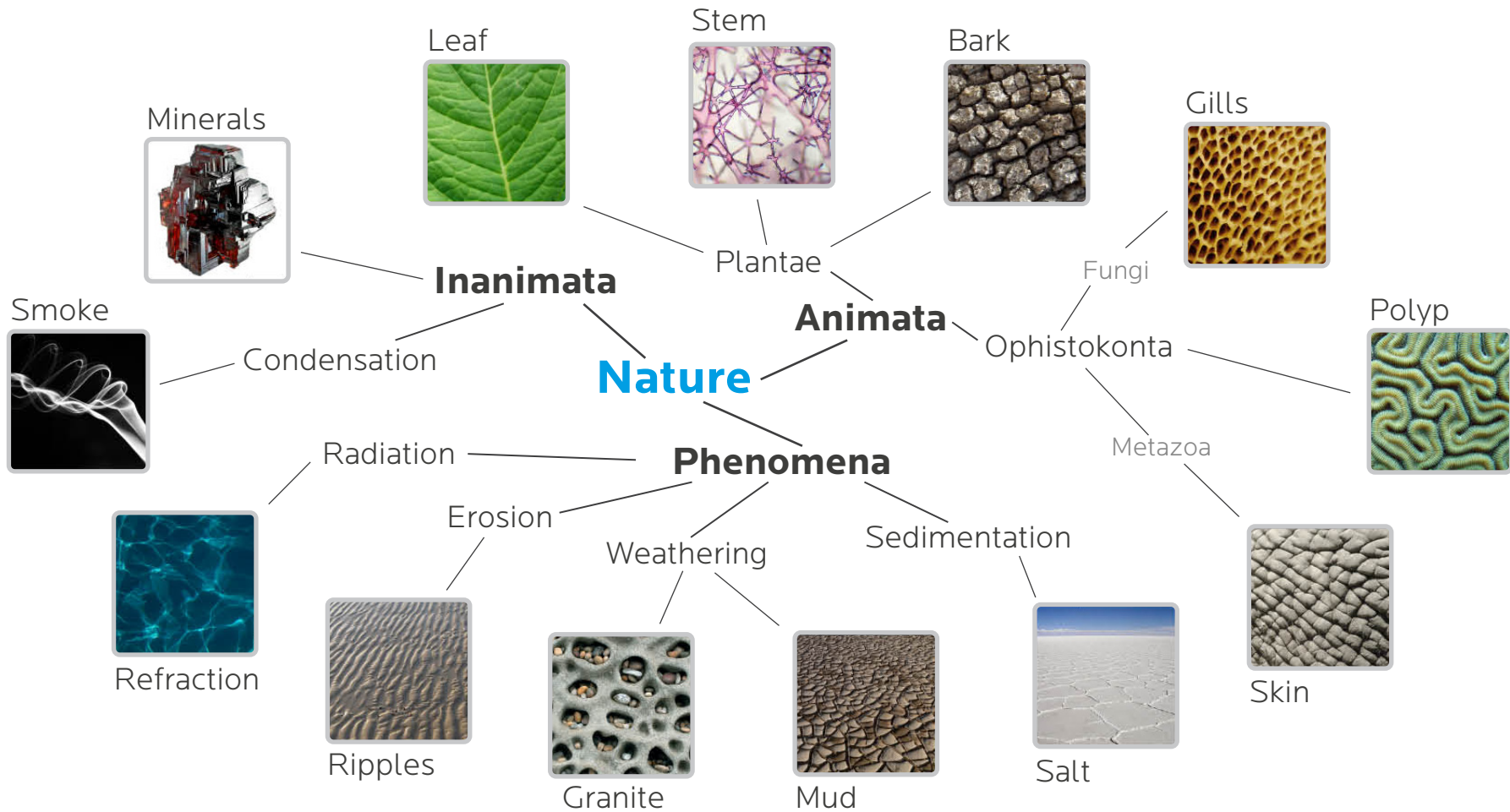
The team is comprised of communications manager Adam Mullett, production manager Birgir Hafstein and logistics manager Lea-Marike Karsten. The researchers are designer Andreas Hopf and engineer Axel Nordin.

We plan to make 36.1 million SEK in revenue by the end of the third year by selling an average of 20,000 SEK worth of products to around 2,900 customers.

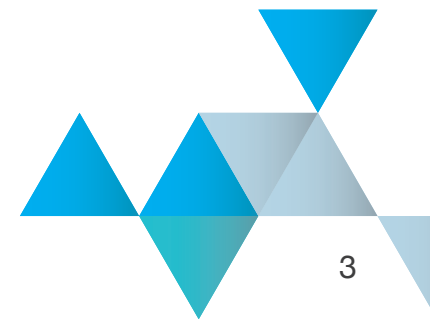
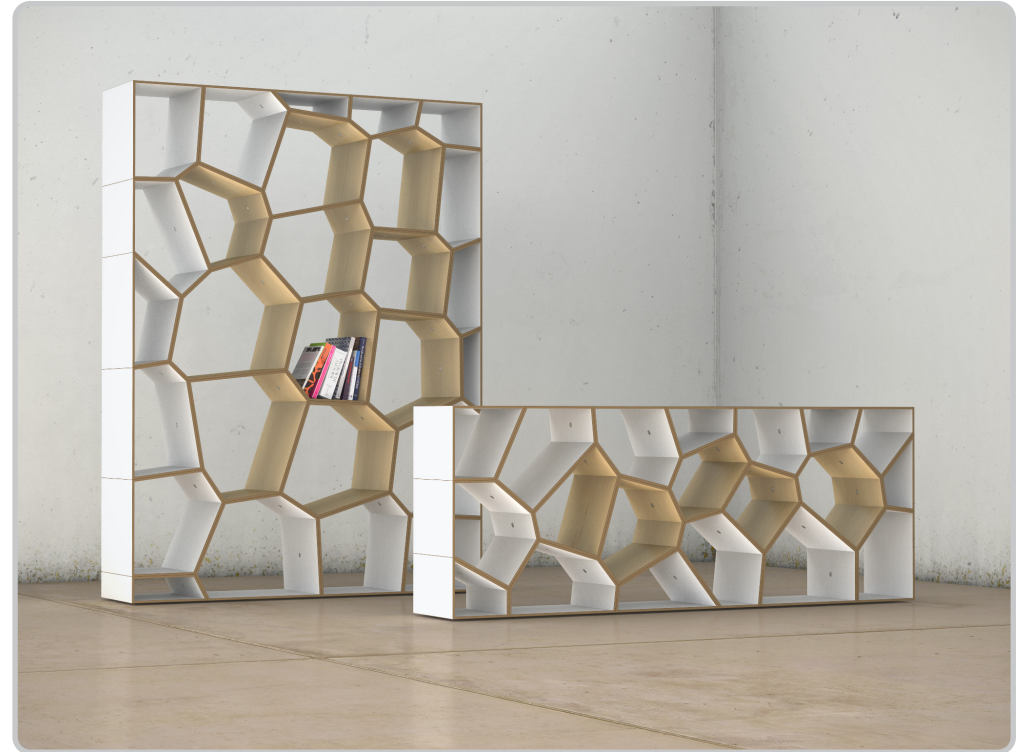
*”36.1 million SEK
in revenue by end
of year 3”*

Business Idea

Shaperyard is a company that brings co-created furniture based on natural morphologies to customers in the form of shelves, tables, lighting and other accessories for the home. High end furniture for the top echelon of society that is elegant, exclusive and personal.

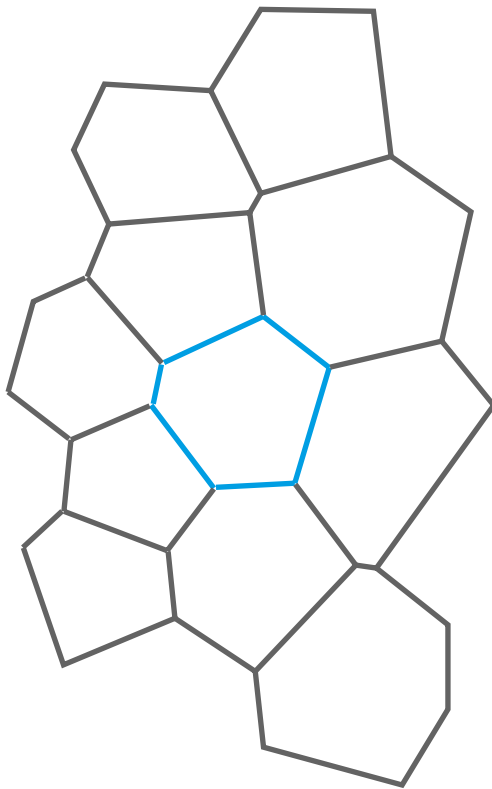


So far, we have made prototyped shelves and tables that are based on a 2D-tessellation, also known as the Voronoi diagram. Such tessellations occur often in animate and inanimate nature (for example on zebra skin or a dried river bed) where it emerges through processes resulting in a stable equilibrium of forces. We also have predesigns in the “Chinese Lattice” and four other tessellations to choose from.





Natural Morphology (Voronoi Pattern)



Designers often simply mimic nature for its aesthetics. By bringing natural tessellations or morphologies to design and using them actively in the design process you can make furniture that is both beautiful and structurally stable.

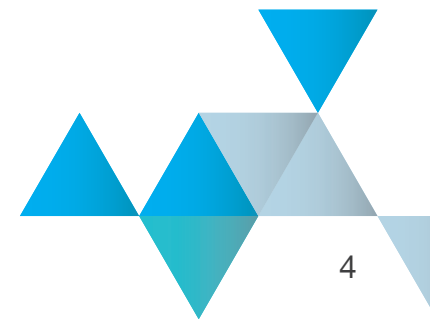
We add value by helping customers co-create unique items of furniture, out of materials of their choice. We exist in various stages of the traditional value chain: in the design, consultation, and service of the furniture. We outsource the production and delivery of the items, but we take responsibility for the final product.

Customers can choose from a range of materials that are available depending on what our producer has in stock. Today customer tastes are diverging more than ever. For example, our potential customer Fredrik Malmberg told us he wanted to buy a nice shelf from a place in Småland, but the choice of colours was limited to white and there was only one material available. Not only that, it would take six weeks to produce.

Shapeyard allows customers to produce their own design (based on a pre-design), choose the colour, size, shape and material type. Our prototypes were produced in less than a week and based on this time, we forecast that orders could be fulfilled in as little as two weeks.

In terms of intellectual property, a strategic move was made and we decided to announce our software to the public in scientific journal articles, trade shows and newspapers, forfeiting our chances of a patent. Instead we intend to keep the software code a trade secret, continuing to develop it, making it harder for competitors to imitate.

As part of our strategy development, we are incorporating the recommendations of Leap Strategies, an environmental strategy development consultancy that will help us work to make our company green. Leap Strategies will help us choose various production methods, materials, transport and disposal schemes that will both work in terms of business, but also work in harmony with the environment.



Marketing Plan

Market Description

The target customers of Shapeyard are affluent and have relatively high amounts of disposable income. They are male and female, between 35 and 55 and fit into the highest income bracket, earning more than 400,000 SEK per year. Our customers are interested in design, furniture and exclusivity. They are interested in attractive and inspiring items of furniture and want to be involved in more than just making a purchase decision. They are willing to spend extra money in order to accentuate their uniqueness and engage in a creative process. Though affluent, they are time-poor and would need a consultant who assists in development.

As seen in table 1, the segment is primarily located in the Stockholm, Gothenburg and Skåne regions. The high income earners in these regions amount to 361,141 people, or 69.9 percent of the country's population in this segment.

Table 1 - Analysis of High Income People by Regions

| Region | # of High Income People | % of Country | % of Regions |
|-----------------|-------------------------|--------------|--------------|
| Sweden | 540,109 | | |
| Stockholm Area | 210,492 | 39.0% | 58.3% |
| Gothenburg Area | 88,768 | 16.4% | 24.6% |
| Skåne Area | 61,881 | 11.5% | 17.1% |
| Total | 361,141 | 66.9% | |

Data source: www.scb.se [2]

We are targeting the domestic furniture segment initially because it has the least amount of regulations and we have good access to producers suited to small scale production.

Our contact with potential customers, suppliers and industry experts shows us that we need to create pre-designs that customers can modify to add their own personal touches to. Heavier and more detailed design requires expertise that consumers do not have.

Customer Profile



“I’d prefer to have some do the design for me using pre-designs...meet a consultant who says they can do what I want. They can show me some suggestions with this trim and that trim and give me tips and so on,” Fredrik Malmberg, a potential customer told us (see LOI in appendix II a).

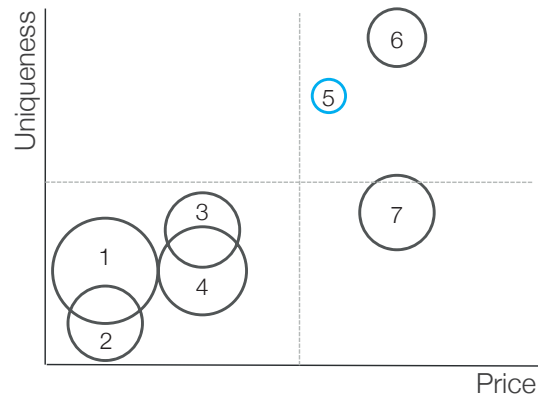
Industry Analysis

The furniture industry in Sweden is one of the European Union’s biggest per capita. The massive players in the industry dominate and make furniture for the masses at affordable prices. The size of the Swedish furniture market is 22 billion SEK annually [1].

The competition in the field is intense. The furniture market as a whole is highly developed and very competitive. IKEA, Mio and Jysk dominate the market in Sweden to a large extent.

Mass-customization and co-creation are the new buzz words in the industry and there are many companies who are entering this field in some way. Though many companies simply offer simple superficial changes (for example two distinct table lengths or three wood colours), we offer a greater degree of customization with a co-created design as well as the choice of morphology, material and size (down to the millimetre). Our company offers a new way to work in the furniture market. By streamlining the processes of design and production, customers, designers and producers are brought closer together than ever before.

Competition



- 1 - IKEA
- 2 - Jysk
- 3 - Mio
- 4 - Ilva
- 5 - Shapeyard
- 6 - Designers
- 7 - Carpentries

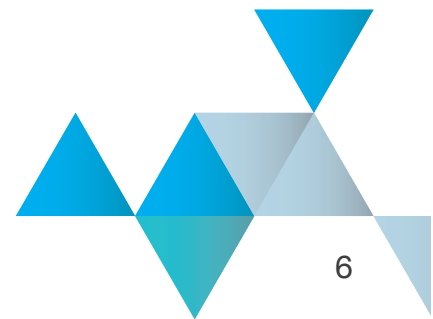
Market Strategy

We compete on the basis of new levels of product individualisation, unseen before in the furniture segment.

Another competitive advantage is the speed of production. We can deliver customized furniture in around two weeks (see appendix I), depending on material availability. This is possible due to the capabilities of our proprietary software, which automates structural feasibility analysis and production data output.

Compared to other players in the high end furniture market (designers and carpenters) we offer an affordable alternative to customers. We are able to cut costs and man-hours by automatically generating data for manual and CNC production.

To find our customers we will rely on our network and word of mouth marketing in the first year due to our lack of capital for marketing. We will sell furniture to people in our network who are also willing to present it to other potential customers such as friends, colleagues and clients.

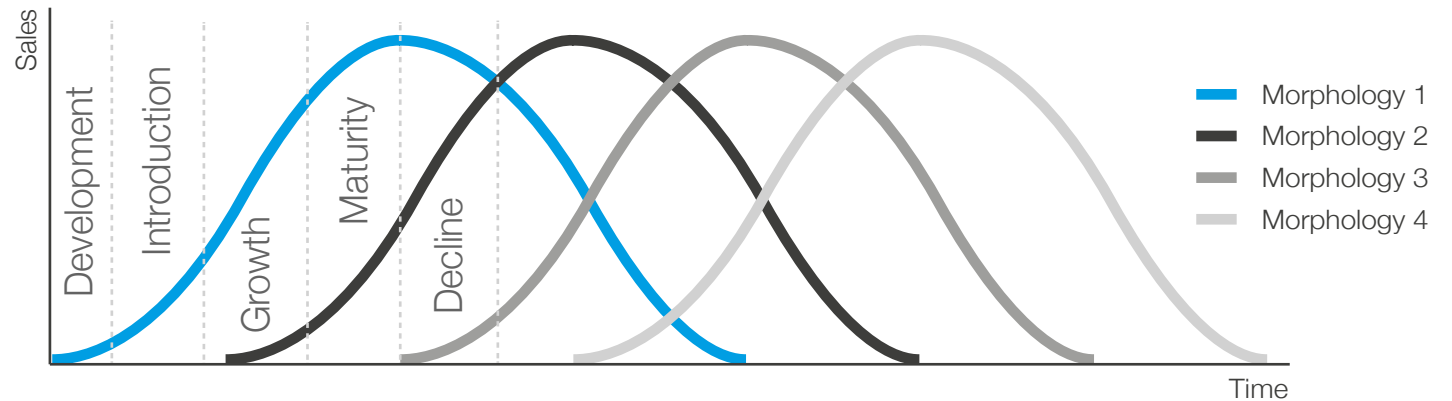




Product Roll Out

We start with a product line based on a certain morphology that we can design and also produce. Over time we will develop other morphologies and design tools that will become available to the consumer. We assume that some of our older patterns will go out of fashion or become superceded by newer ones.

Morphology Development



Note: This graph shows how we intend to roll out morphologies. Each line represents a new style for a product line.

Once we have established our brand with suppliers and customers using tables and shelves, we plan to expand into other categories including lighting or decorative ornaments such as fruit bowls, which are easy to make. The easy-to-implement and high-profit tables and shelves will give us a stable base to work from because of the lead time we will have on sales. We have established relationships with suppliers in Germany and Sweden (see appendix I). Also, we have two willing customers, Fredrik Malmberg and Zac Mullett, ready to buy the first units that will come off the production line (see LOI's in appendices II a & b).

Market Analysis

| | Domestic | Office | Children | Retail | Lighting | Accessories | Hotels |
|-----------------|----------|--------|----------|--------|----------|-------------|--------|
| Production Ease | ● | ● | ○ | ● | ○ | ● | ● |
| Profitability | ● | ● | ● | ● | ● | ○ | ● |
| Regulations | ● | ○ | ● | ○ | ○ | ● | ○ |
| Competition | ● | ● | ● | ● | ● | ○ | ● |
| Market Size | ● | ● | ● | ● | ● | ● | ● |

● High Feasibility ● Medium Feasibility ○ Low Feasibility



Entry Level Pieces

Through our customer research and dealings with producers, we have encountered several market entry barriers. Most centre around unfamiliarity with morphology design and the process of co-creation. To ease people into the idea and to reduce every one's risk (less social risk for the client, less risk for the producer in terms of time and materials and less risk for us in terms of lead time in sales) we have added a line of entry level pieces. Though in a similar style, they will be smaller, mass producible and lower priced than our other pieces. We intend to sell them via design stores. Along with each piece, a booklet with more information and marketing material will be distributed. This is how we will get exposure and enter the market.





Marketing

Our marketing strategy is set out over a few years. We will begin with a direct marketing strategy when we are small, utilizing word of mouth advertising, our Internet site as well as trade shows. Later, we will find a suitable location to open our first shop, adopting a “brick & mortar” approach. Following this, when we have enough cash flow to develop our cutting edge website to a high level, we will adopt a “bricks & clicks” approach, using the Internet to complement our shop fronts.

Direct Marketing

Our first customers will come from word of mouth marketing from people who buy our prototypes or entry level pieces and use them as demonstrator pieces in the lobbies of public buildings and hotels and so on. From this nucleus of interest we will find more customers.

Using trade shows that focus on home furniture, but also shows that focus on design, will find huge amounts of qualified prospect customers who are highly interested and motivated to buy new and interesting furniture for their home.

At this stage, our website will serve as catalogue for our products to date. It will showcase information about how we came to our unique designs, but will also show some pictures of existing prototypes.

There will also be an interactive and fun element to the website. We will develop an easy to use web application for customers. They will type in parameters about the length, width, height and which morphology shape they would like to have. The design is not complete at this stage, but with our software we check if it's possible to build the piece as is and send them for a final quote or invite them for a further consultation.

During this first phase we will have a limited range of products due to the geographical scope of our production methods. Creating strong relationships with producers is crucial for our company's success and using the same producer repeatedly is something that will improve our product and our service.





2011

Direct Sales



2012

Brick & Mortar



2013

Bricks & Clicks

Brick & Mortar (shop fronts)

After one year of direct marketing sales, we aim to have enough capital to launch our first shop, which will continue to use the consultation method to sell furniture. By this time we will have expanded our product line. Choosing the location of our first shop is very important and we will do research into where our customers come from. However not only the current customer base is important. In terms of the design world, it is important to consider the implications of city launch choice. Berlin, Copenhagen, Stockholm, Barcelona, London and Milan have been preliminarily been chosen for future research.

Bricks & Clicks (shops and internet sales)

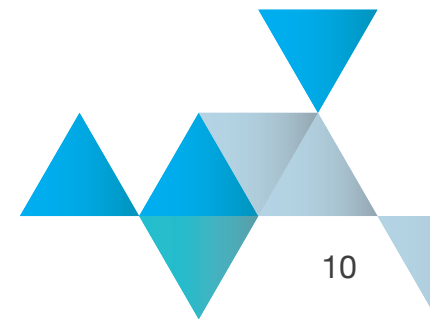
By the third year we would like to have a highly technologically capable website where users could actively invent their own designs, choosing from different materials, product categories, forms and structures. This would allow people to work creatively from home and increase sales due to that luxury. By this time the website would not just have a web application for making simple models, but would actually be able to make manufacturing calculations.

Producers

One of the cornerstones of our business are the relationships with producers. Developing good relationships means that we will have a quick turnaround on items produced and high quality products. Initially we will need to educate producers about our concept and work with them on the production process to find the best way to build the new and challenging designs that customers might order.

Due to this fact, one of our main challenges is to find reliable producers that are interested in our concept and willing to work with us. This process has already begun and we have produced five different prototypes with five producers (see appendix I) in Germany and Sweden. In addition, we have initiated relationships with six workshops in the Blekinge and Småland regions.

Production will be local in the foreseeable future, both in order to have good quality control and to maintain a good relationship with our producers. Initially, we expect the production to be based mainly in the Blekinge and Småland regions. While it is important for us to have good relationships with producers, it is also important that we cultivate a large array of contacts to hedge against potential risks such as bankruptcy of one workshop or a deferral of our orders for long periods of time.





Sales

In the first three years we hope to achieve a market share of around 0.5 percent of our target market. We assume that we will maintain this market share over the three year period, taking into account our expansion into new markets. Therefore, our projected sales revenues amount to roughly 36 million SEK in the third year, or just over 57 million SEK accumulated. Given our sales estimations and the fact that the annual furniture market of Sweden is estimated at around 22 billion SEK yearly [1], we would hold around 0.16 percent of the total furniture market at the end of year three.

Projected Revenues (in millions of SEK)

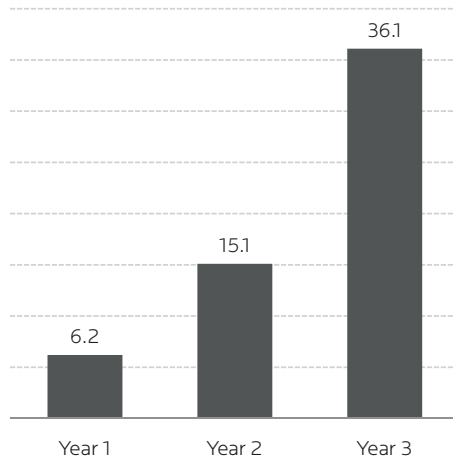


Table 2 shows our sales goals for the first three years. In year one we plan to reach 0.5 percent of the Skåne segment (309 customers). We estimate the yearly purchases of each customer to be 20,000 SEK on average.

In the second year, we will roll out to the Gothenburg market with the same market share goal of 0.5 percent (444 customers.) Finally, in the third year we plan to expand to the Stockholm region (1,052 customers).

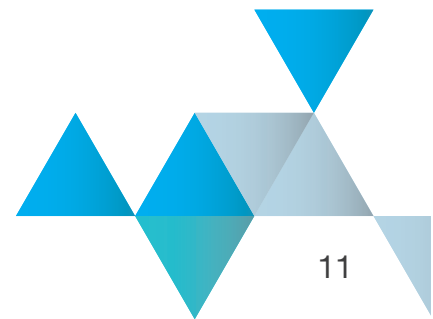
Table 2 - Market Share Goals & Projected Revenues

| | Year 1 | Year 2 | Year 3 |
|---|-----------|------------|------------|
| Market share goal (% of high income people) | 0.5% | 0.5% | 0.5% |
| Market share goal (# of high income people) | 309 | 753 | 1,806 |
| Market share goal (% of total furniture market) | 0.03% | 0.07% | 0.16% |
| Projected customer spend p.a. (SEK) | 20,000 | 20,000 | 20,000 |
| Projected revenues p.a. (SEK) | 6,188,100 | 15,064,900 | 36,114,100 |

Data source: www.scb.se [2]

Per capita, Swedes spend the most in the EU on household items and furniture at 2,380 SEK, almost double the EU average of 1,491 SEK. Since 2004, industry growth has averaged 13.5 percent per annum, compared to 5.5 percent in the EU as a whole [1].

According to the EU's statistics agency Eurostat, 2008 domestic furniture production segmentation was: kitchen furniture 56 percent; furniture parts 19 percent; bedroom furniture 10 percent; other furniture 6 percent; dining and living room furniture 5 percent and non-upholstered seating 3 percent [1].





Environmental Strategy - With Leap Strategies

Shapeyard inherently generates lower environmental impacts than many other furniture manufacturers because our individual units reduce natural resource requirements. We focus on durable, high quality products with longer lifespan than many of the “throw away” models on the market.

Our long-term goal is to sell via our website, which will reduce the need for office and floor-space, lowering environmental impact. Considering that our target market are generally environmentally conscious, we plan to develop this into a focused competitive advantage by positioning ourselves as environmentally responsible furniture providers.

As advised by our environmental consultants Leap Strategies, we will address our environmental aspects throughout the product life-cycle by sourcing all our input material from environmentally certified providers (e.g. Forest Stewardship Council (FSC) certified wood/chipboard). We aim to use environmentally responsible transport providers. We are also investigating options to manage product “end of life” in a responsible manner. Options are a take back programme, where Shapeyard will manage end of life for customers, potentially recycling these materials.

A second option, although more research is required, is to develop a product service system (PSS), where furniture is leased over the long term (say 3-4 years) to individual clients, who like the novelty of new furniture every few years. Following the end of the term, the furniture is returned and replaced with the latest design.

These end of life options are not only more environmentally responsible, but also guarantee that Shapeyard maintains personal contact with the client post purchase, and is the primary option for repurchases. We are sure that our robust environmental profile will further differentiate us from our competitors and increase our attractiveness to our target customer. The end result is increased willingness to pay and improved brand value. This can be characterised as an “eco-branding” environmental strategy (see appendix III). [3]

Business Model

Shapeyard's business model is to generate revenue via direct sales, shops and sales from our website. These three revenue streams will be implemented in sequence as our cash flow and capital grow. In the first years Shapeyard will be a niche company growing organically.

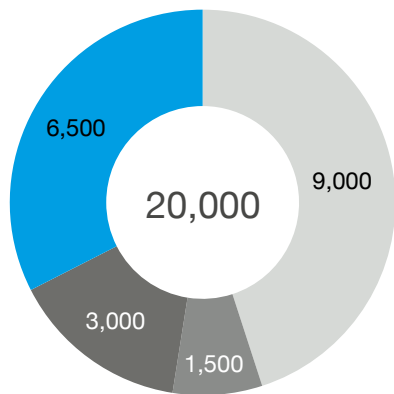
The aim of our business model is to create a novel and interactive way of creating and buying furniture. We enable customers to be creative, co-creating a unique piece of furniture for their home. Our design program makes it possible to cut out the time consuming and costly processes of making the product, because of the data that's generated by the program. In around two weeks we are able to produce the ordered piece of furniture for our customers.

The production in our business model is outsourced to producers in Sweden, located in Blekinge and Småland. Also the assembly and delivery of the end product is outsourced to freight companies. We decided to outsource these activities because the costs to build up our own production line would demand a high investment. Also companies that have the right capabilities to produce for us in Sweden have underutilized capacity, which they would like to fill with our production.

Our pricing strategy is value-based. Normally, customers purchase furniture from well know, high priced brands because they feel that their personal value is equal with the price. In our case, the perceived value is derived from in-depth participation in the product's development process and new level of individualisation.

We estimate that the average annual purchase per customer would be 20,000 SEK. For example, for a shelf at that price, production is around 9,000 SEK, delivery about 1.500 SEK and our service costs are approximately 3,000 SEK for consultation and organisation of the whole process. This leaves us with a profit of about 6,500 SEK or a profit margin of 32%.

Cost Structure
(Shelf - 20,000 SEK incl. VAT)

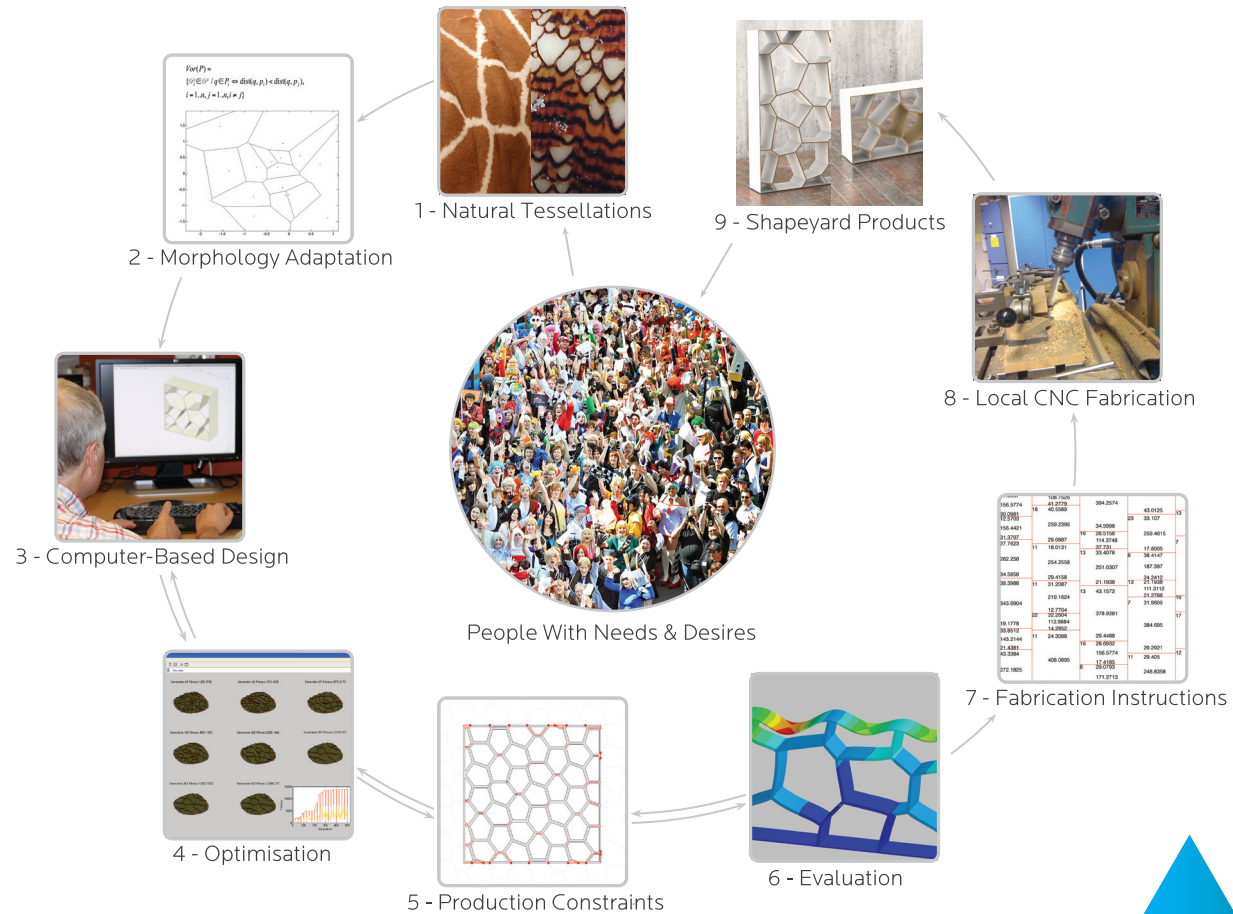


- Production
- Transportation
- Service
- Profit

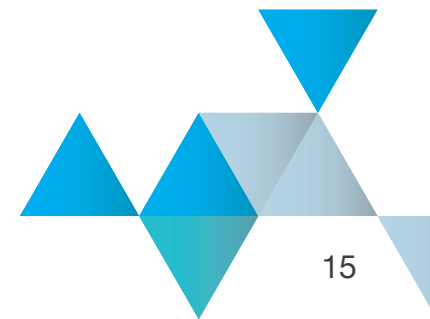
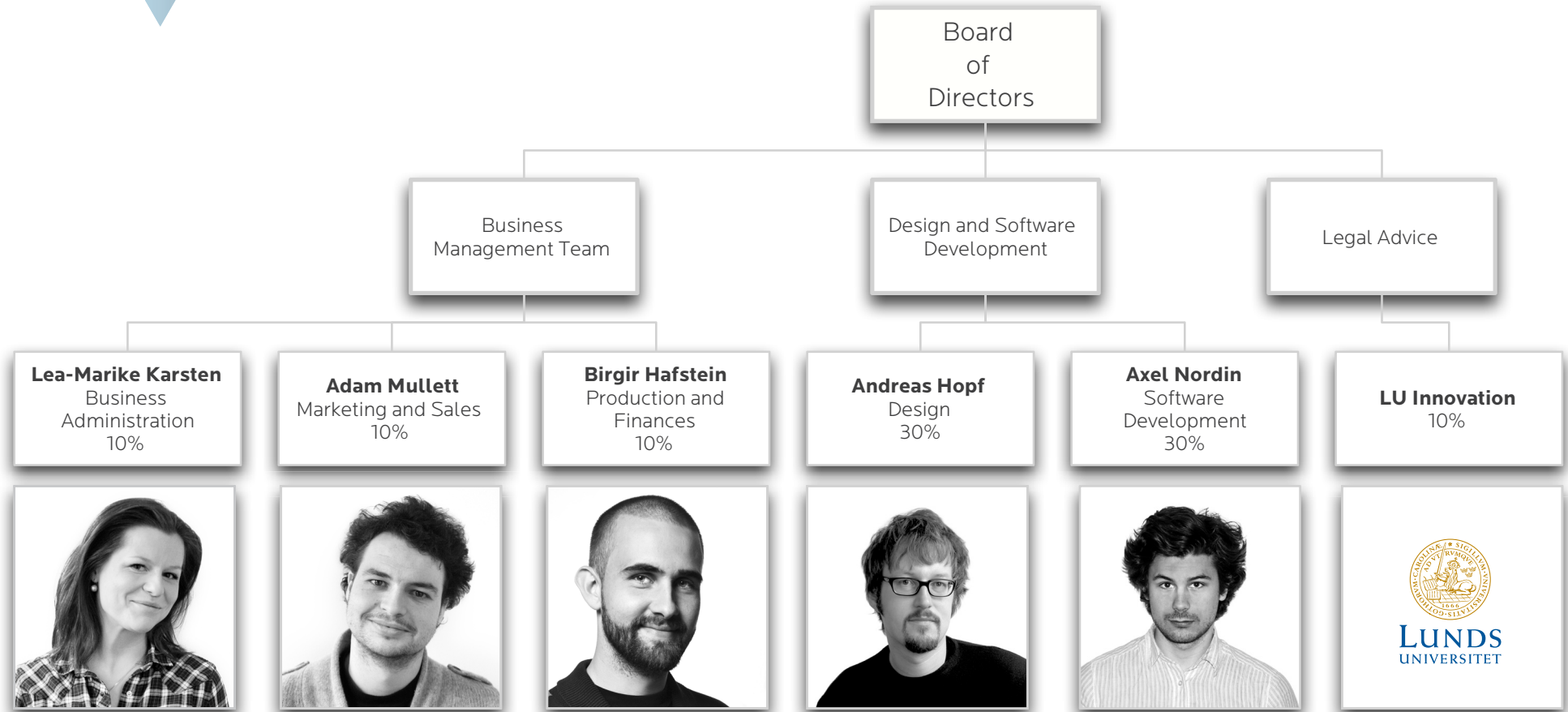
Our value chain looks different to that of the global furniture market because the customer drives our development. Most of our furniture will get produced in an order-based and customized fashion, but our entry level pieces will be mass produced. Making large orders of entry level pieces will help us create a good relationship with producers in terms of volume commitments. Also we will discuss the pre-designs and the customizable options with the producer first to ensure the production friendliness and efficiency of designs.

The graphic shows the value chain when the customer chooses to co-create a piece of furniture with our design consultant. To the customer the process is opaque: we take care of the entire process from start to finish for them.

Picture 3 - Value Chain



Organization





“LU Innovation will match external investment up to 300,000 SEK”

The Management Team

Lea-Marike Karsten - Business Administration and Logistics Manager

Lea is a 25-year-old from Germany. She has a Bachelor Degree in Technical Business Administration and Logistics as well as a certificate as a banking professional due to her working experience of six years in an international bank in Germany. Also she grew up in a business household holding two furniture stores and a carpentry. The former start-up experience of Lea is in the Logistics and the furniture sector. She already started up a logistics platform in Germany and the production of bamboo furniture. Both businesses are still running successfully. Lea can offer Bespoke Products a lot of former experience in the crucial sectors of the business and is putting in her main competencies which are organisation and structuring.

Adam Mullett - Marketing and Communication Manager

Adam is a 25-year-old journalist from Australia who lived for the last five years in Belgium, Germany, Lithuania and now Sweden. He has a Bachelor degree in Communications with majors in Advertising and Journalism. He has also worked in the television industry and in the exhibition industry. He successfully started and closed a tour company in Lithuania and was also the co-founder of the news website BalticReports.com. Adam is really passionate about writing and has excellent communication skills. Therefore he is responsible in Bespoke Products to develop the advertisement and marketing our customers like, also he is responsible for finding and attract our customers.

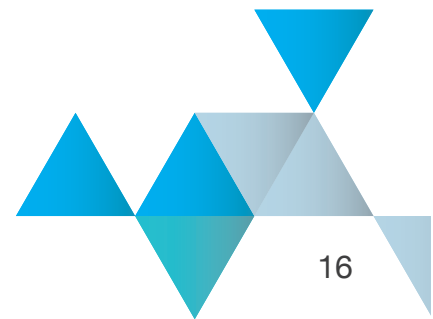
Birgir Hafstein - Finance and Production Manager

Birgir is a 28-year-old economist from Iceland who moved to Lund in summer 2009. He has a Master in Economics and in Iceland he worked for two years in the asset management department of Landsbanki as a fund manager. Also he worked as a woodworker for two years, which makes him competent for controlling the production of Bespoke Products and evaluate the results from our producers. Furthermore his financial skills add a lot of value to Bespoke Products financial planning and strategies.

LU Innovation

Sven Olsson - LU Innovation Representative and a Board Member

LU Innovation is Lund University Technology Transfer Office (TTO). They help researchers from Lund University to commercialize their research. In Bespoke Products they hold 10% ownership of the business and gives therefore legal advice and financial help. LU Innovation provides up to 50,000 SEK until May 2011 for Bespoke Products. Also they match up to 300,000 SEK in May 2011 if we find external investment of at least the same amount.





The Research Team

Andreas Hopf — Designer

Andreas is a 42-year-old designer from Germany. He has 18 years experience in designing consumer products for major brands and 7 years experience in design education at university level in Sweden. He has also been running a design consultancy with various partners for 11 years in the UK and Germany. Andreas is the responsible designer of Bespoke Products. He is designing the pre-designs and the customization possibilities as well as checking the production friendliness and cleverness of the designs. Andreas is also a member of the board of Bespoke Products.

Axel Nordin — Design Engineer and Programmer

Axel is a 24-year-old design engineer from Sweden. He has a Master Degree in Mechanical Engineering. Furthermore he has been researching and creating computer based tools for generating bespoke products over the last two years. Axel is responsible in Bespoke Products for developing the software to a bigger extent constantly. Also adding different product categories and controlling external IT deliveries.

The Board of Directors

In Addition to the aforementioned Andreas Hopf, from the research team and Sven Olsson, from LU innovation, the board includes the following members.

Bengt L. Andersson — Chairman

Bengt is currently active as chairman / member of a number of companies and consultants with a focus on mentoring and development of business. He was previously Global HR Director and CEO of Tetra Pak in Sweden.

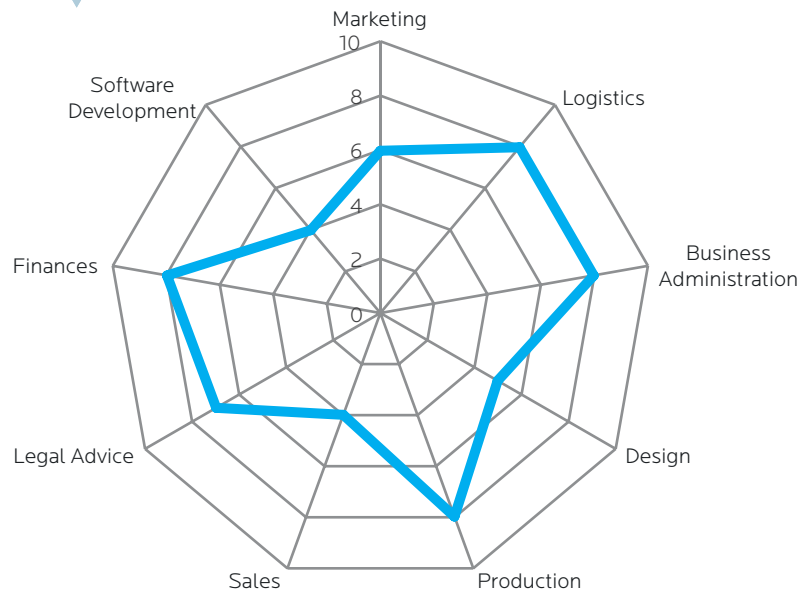
Peter Berntson — Board Member

Peter is a member of five boards from different companies. He is also an advisor in industry matters to IKEA having previously been MD and group head of IKEA AB's industrial group Swedwood, which Peter took from 2 employees to 14 000 employees in over 35 factories all over Eastern Europe. Since his retirement in 2006 he is active on different boards and studying as well as educating.



As seen in the graphic some competencies are lacking in our company that need improving. For example, sales competency needs to be improved when opening our first shop.

Competence Net



- For the first year, the management team will be responsible for the sales. In the second year we will employ specialist people for sales.
- Over time we will introduce more product categories and we will need more software development power. Therefore we will have to employ another programmer. This goes hand in hand with the designing.
- The marketing section of Shapeyard needs more hands because of the high workload, particularly in addressing our customers and developing strategies to position Shapeyard in the market.

From the outset, our aim is to develop a culture of innovation in Shapeyard. Our company is living through customization and needs a constantly innovative approach to address customers who are interested in their complete individuality. This complements our vision of Shapeyard. We are aiming to become a well-known, mid-size company which is famous for their solutions in customizing not only furniture but also all different kinds of domestic products in the future.

Exit Strategy

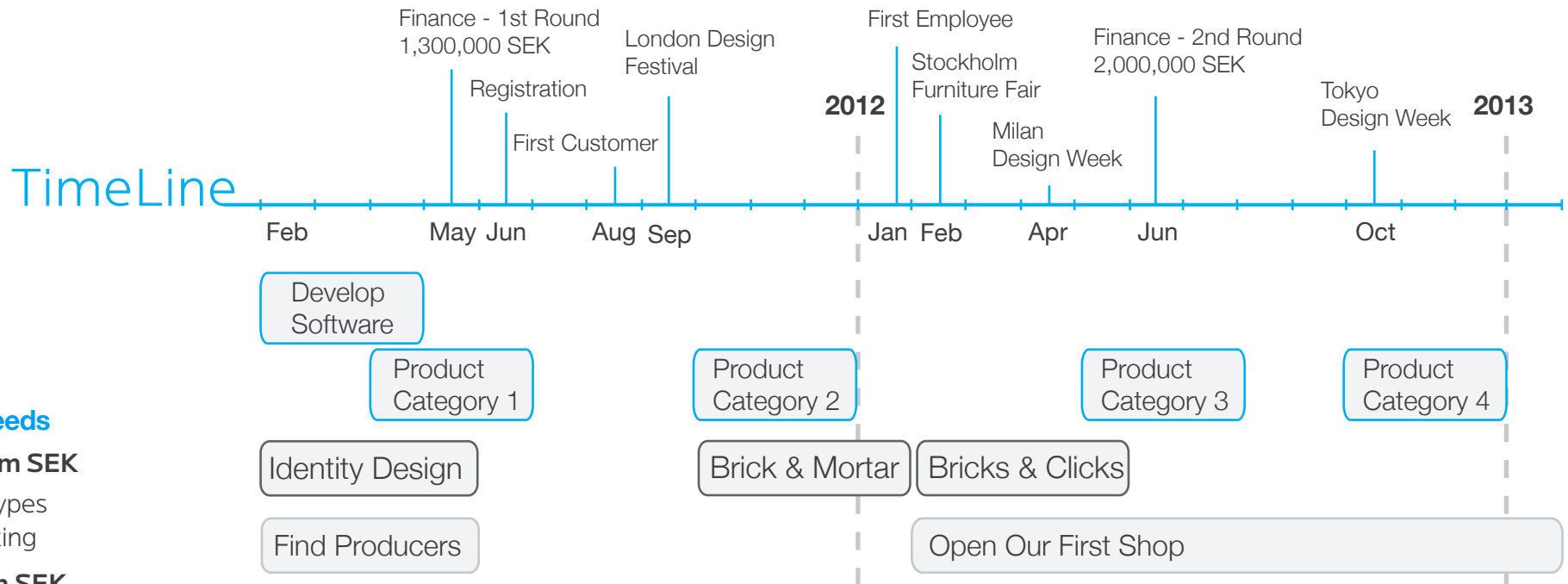
From a realistic point of view we know that there can be situations that our company is attractive for sale. We are aware of this and are open to sell the company if this is the most valuable option. We could also merge with other companies, which would be a useful opportunity to stabilize and grow our company.

An IPO is unlikely during the first five years, because we think we will not have the required size in terms of turnover and profit.

We are also prepared to dilute our shares in favour of external investors to guarantee a financial stability in our business in the early stages.

Implementation

We want to establish Shapeyard in summer 2011 and get our first customers at that time. We need investors for our company to secure our start-up financially. In the first quarter we will have a negative cashflow, so we need external investment before starting the company. Other milestones are the development of our business model in the next three years as well as finding further financing. (for a detailed gantt chart see appendix IV).



Capital Needs

Year 1 - 1.3m SEK

- Prototypes
- Marketing

Year 2 - 2m SEK

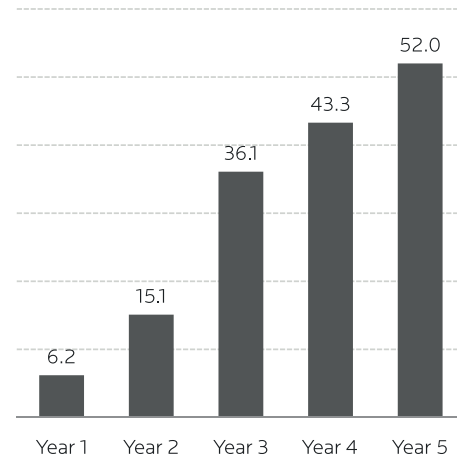
- Shop expenses
- Marketing

Currently the Management Team is developing market entry strategies, installing a webpage, designing a corporate identity, performing research about our customers and building prototypes at new producers to check their capabilities. The Research Team is developing the software and pre-designs for our first product lines and talking with producers about technical issues.

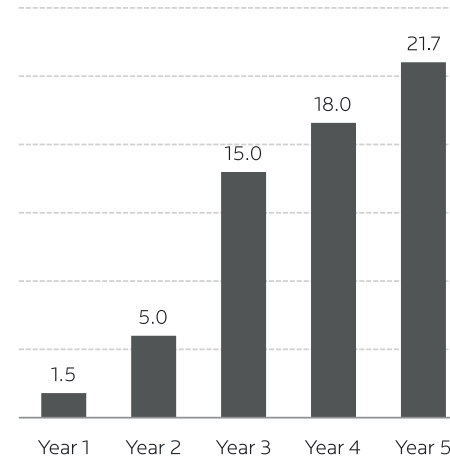
Profitability & Financing

A detailed financial analysis, along with all underlying assumptions are included in appendices VI a-c

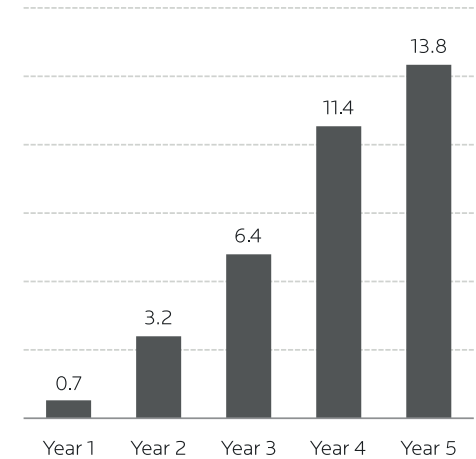
Sales Revenues
(in millions of SEK)



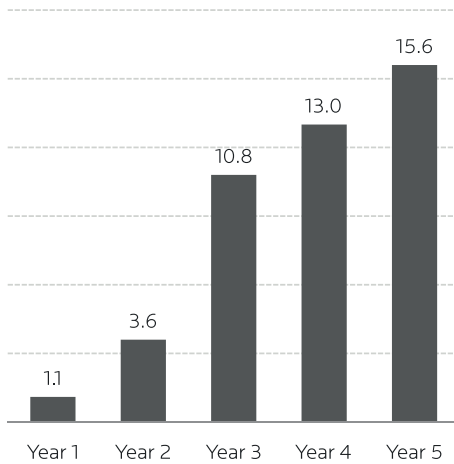
Income From Operations
(in millions of SEK)



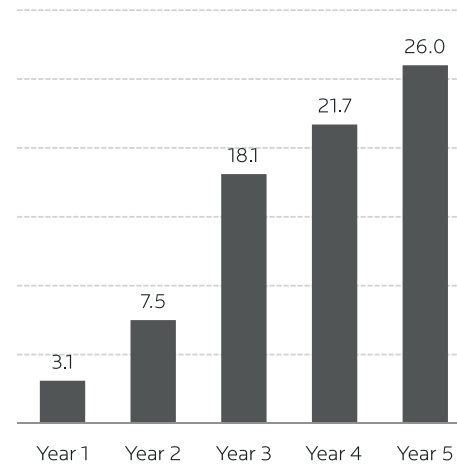
Net Cash Flow
(in millions of SEK)



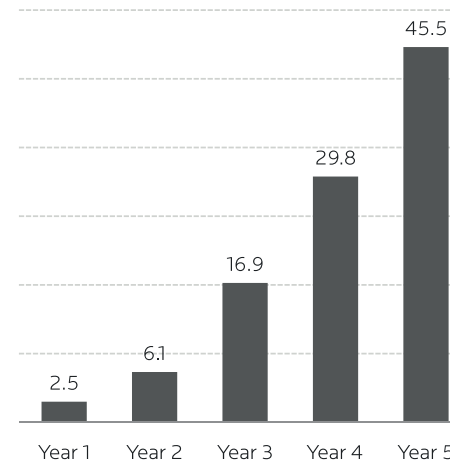
Net Income
(in millions of SEK)



Gross Profit From Sales
(in millions of SEK)



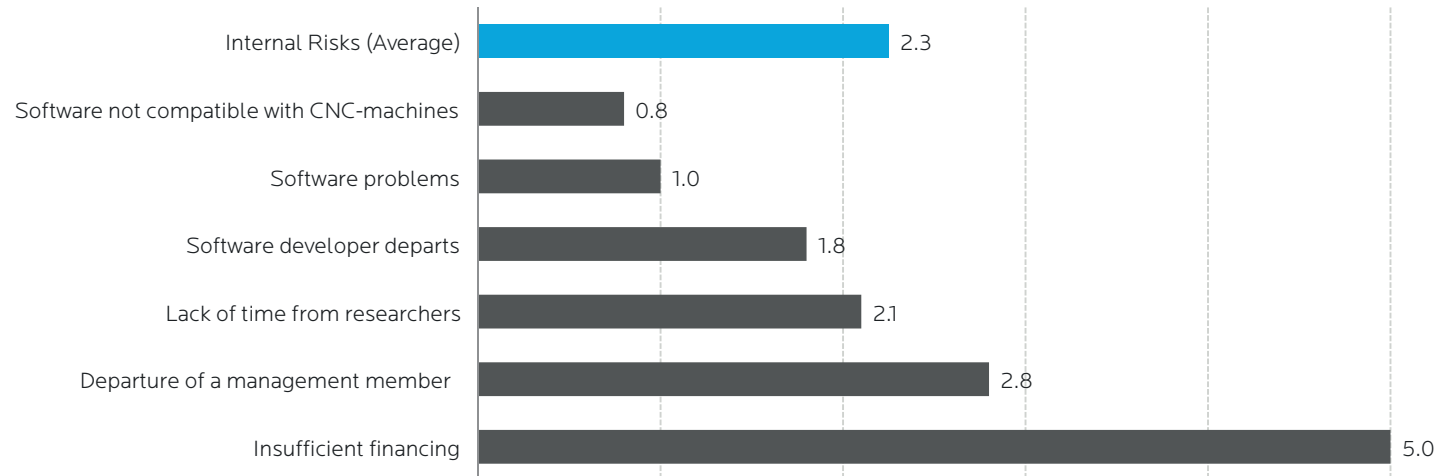
Total Assets
(in millions of SEK)



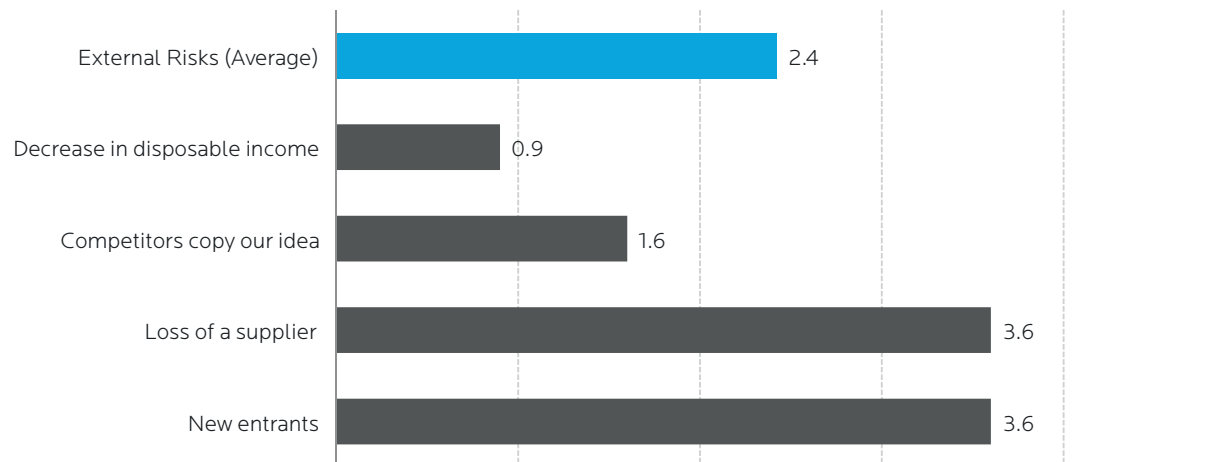
Risk Analysis

Following is a breakdown of the risks facing the company in the coming year (For details, see appendix VI).

Internal Risks



External Risks





Technical Risks

Internal Risks

As with all software, ours will have some bugs that will appear as people start to using it. It could also be the case that the outputs generated by the software aren't fully compatible with all CNC-machines used by our producers. These problems have to be fixed quickly or we face the risk of losing customers.

In the early stages this will be addressed by Axel Nordin, the team's mechanical engineer/programmer, but the long-term plan is to hire a full time programmer to solve these issues. Because Nordin is currently the only person who can fully operate the software, we will make it his responsibility in the ownership contract to deliver a working program, to train other members of the team and to deliver a user manual. These things should be done by the end of May, 2011.

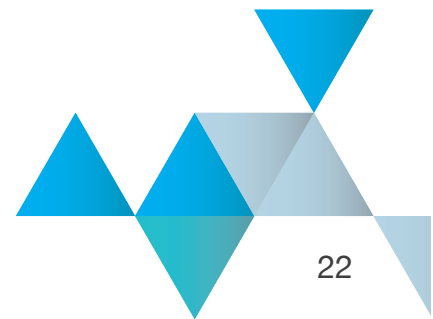
Economical Risks

Our company will need some external finance in the start-up phase in order to pay for prototypes, pay salaries as well as other expenses. If we don't succeed in securing enough finance it is a possibility that the company will go bankrupt. However, the management team is willing to lower (or sacrifice completely) their salaries for some time period. It is also possible to use bootstrapping methods in order to obtain free prototypes and lower other costs for rent, accounting services, legal services etc.

Staff Risks

Given the fact that the no one in the management team is Swedish, we face the risk of one or more of the members returning home and leaving the company. In addition, members in the management team could get external job offers. This would have a considerable impact due to the fact that our skills are somewhat different and complementary, so we would need to hire replacements. However, it is the intention of each individual in the team to take the idea to market and continue to work for the company until exit.

The research team will continue their work at Lund University so there might be a risk that they don't have the time necessary to devote to the company. If this were to happen we would lose some know-how related to the software, natural algorithms and design. To compensate this, we would need to hire the programmer sooner then expected as well as a designer.





Technical Risks

Economical Risks

Market Risks

Environmental Risks

External Risks

Competitors in the field of customizable design furniture already have a head start in many respects. If they saw what we are doing, they could scale up to our capabilities because we do not have a patent on the software and will not have one in the future. To minimize this risk it is crucial to achieve first mover advantage in using the natural morphologies in good designs and gain exposure through fairs, magazines etc. We will also continue to develop the concept and the software underlying it, making it harder for competitors to imitate.

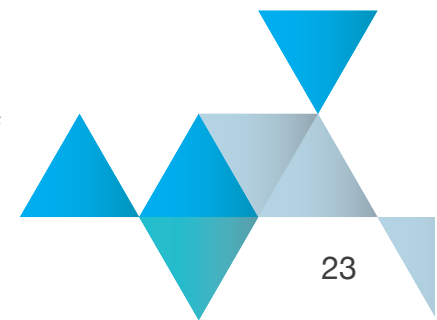
Our target market is a very thin slice of society and our value based pricing strategy relies on them having a certain level of disposable income to be able to pay for our product. A decrease in disposable income would therefore negatively affect our sales but considering the good status of the Swedish economy, this should not pose a problem in the coming years.

Also any failures in production would be very disruptive to our process. For example, the bankruptcy of one of our suppliers would have major implications, given the limited number of suppliers. In that case it would probably take months to find a new supplier and build up a relationship. In order to avoid this we will seek to find reliable producers from the beginning that are willing to enter into long-term contracts.

Given the increasing popularity of co-created/customized furniture, the risk of new entrants to the market is high. With an increased number of competitors it will be more difficult to maintain the necessary levels of sales. As previously mentioned, we will minimize this risk by first mover advantage and exposure as well as developing the software and adding to our base of pre-designs.

As always, with a new product, there is the risk of demand. We don't know in advance if people will actually buy our products. Therefore, it is crucial to have good exposure on the market and make our company's benefits known to consumers.

Due to the nature of our business and how we allow customers to choose any materials they want from our selection, there is the risk that we could lose the edge due to a material no longer being available. For example if a customer would be interested in certain types of engineered wood, but we were not able to supply it due to lack of availability or environmental restrictions, we would not be able to satisfy their desires.



Appendix

I - Prototypes

Bookshelf



- Production Time: 6 Hours
- Production Costs: 7,000 SEK
- Material: Plywood
- Delivery Time: 1 Week
- Producer: Plattenladen (Berlin)

Coffee Table



- Production Time: 6 Hours
- Production Costs: 2,000 SEK
- Material: Metal & Glass
- Delivery Time: 1 Week
- Producers: Linde Metalltechnik AB (Helsingborg), JSW Pulverlackering (Värnamo) & Värnamo Glasmästeri & sliperi AB.

Dining Table



- Production Time: 8 Hours
- Production Costs: 5,000 SEK
- Material: Metal & Glass
- Delivery Time: 1 Week
- Producers: Linde Metalltechnik AB (Helsingborg), JSW Pulverlackering (Värnamo) & Värnamo Glasmästeri & sliperi AB.



II a - Letter of Intent

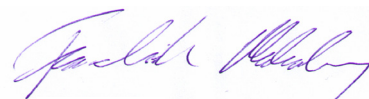
Fredrik Malmberg
Dag Hammarskjölds väg 1d
224 64 Lund
Sweden

Jan. 20, 2011

Dear Shapeyard management,

I have the intention to design and build a shelf that will hold my books and other ornaments for my living room. I believe that your software will be able to give me the solution that I need for my home, which I have been unable to find elsewhere. I am willing to pay between 12,000 – 18,000 SEK for the shelf, which I hope to be delivered in good time, hopefully two weeks.

Best Regards,



Fredrik Malmberg



II b - Letter of Intent

Zac Mullett
58 Faulkner Street
Hoole, Cheshire,
CH2 3BE, UK

Jan. 27, 2011

RE: Shapeyard furniture prototype

Dear Sir,

I am writing to you in order to notify you of my interest in financing a prototype of Shapeyard Products furniture item. My personal design space in central Stockholm is presently in need of lighting and shelving that will inspire and impress my guests. The Shapeyard Products prospectus demonstrates an interesting new technique in creating unique, eye-catching furniture that I believe will become popular amongst style-conscious Swedes.

Please contact me at your earliest convenience to discuss this matter.

Yours sincerely,



Zac Mullett
Managing Engineer

III - Environmental Strategy [3]



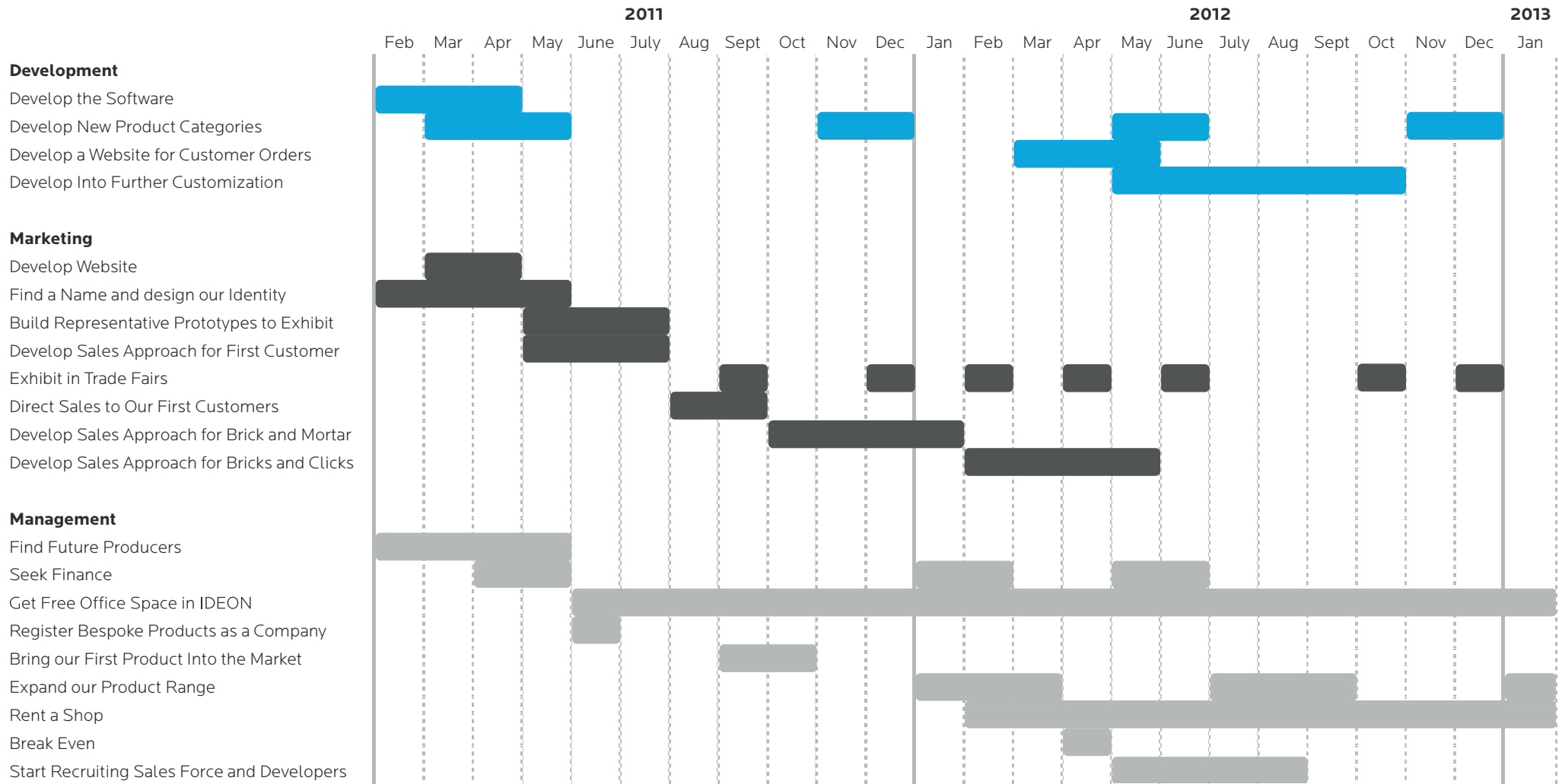
Source: (Orsato R. , 2009)

- Provides marketing differentiation
- Increases will to pay
- Business model hard to replicate

Eco-branding relies on:

- High quality
- Free access to information
- Third party verification (optional)

IV - Gantt Chart



V a - Income Statement

| | | Year 1 | | | | Year 2 | | | | | Year 1 | Year 2 | Year 3 | Year 4 | Year 5 |
|--------------------------------|----|----------------|----------------|----------------|----------------|------------------|------------------|------------------|------------------|------------------|------------------|-------------------|-------------------|-------------------|--------|
| | | Q1 | Q2 | Q3 | Q4 | Q1 | Q2 | Q3 | Q4 | | | | | | |
| Sales Revenue | 1 | 1,280,000 | 1,480,000 | 1,800,000 | 1,620,000 | 3,140,000 | 3,600,000 | 4,360,000 | 3,960,000 | 6,180,000 | 15,060,000 | 36,120,000 | 43,344,000 | 52,012,800 | |
| Less: Cost of Goods Sold | 2 | -640,000 | -740,000 | -900,000 | -810,000 | -1,570,000 | -1,800,000 | -2,180,000 | -1,980,000 | -3,090,000 | -7,530,000 | -18,060,000 | -21,672,000 | -26,006,400 | |
| Gross Profit from Sales | | 640,000 | 740,000 | 900,000 | 810,000 | 1,570,000 | 1,800,000 | 2,180,000 | 1,980,000 | 3,090,000 | 7,530,000 | 18,060,000 | 21,672,000 | 26,006,400 | |
| Salaries | 3 | 207,000 | 207,000 | 207,000 | 207,000 | 353,700 | 353,700 | 353,700 | 353,700 | 828,000 | 1,414,800 | 1,808,280 | 2,241,108 | 2,717,219 | |
| Rent | 4 | 0 | 0 | 40,800 | 61,200 | 67,320 | 67,320 | 67,320 | 67,320 | 102,000 | 269,280 | 296,208 | 325,829 | 358,412 | |
| Shop Equipment | | 0 | 0 | 90,000 | 20,000 | 22,000 | 22,000 | 22,000 | 22,000 | 110,000 | 88,000 | 96,800 | 106,480 | 117,128 | |
| Less: Depreciation | | 0 | 0 | 18,000 | 4,000 | 8,800 | 8,800 | 8,800 | 8,800 | 22,000 | 35,200 | 47,520 | 59,312 | 70,875 | |
| Stationery | | 3,500 | 700 | 700 | 700 | 770 | 770 | 770 | 770 | 5,600 | 3,080 | 847 | 932 | 1,025 | |
| Office Equipment | 5 | 30,000 | 0 | 20,000 | 0 | 25,000 | 25,000 | 25,000 | 25,000 | 50,000 | 100,000 | 110,000 | 121,000 | 133,100 | |
| Less: Depreciation | | 15,000 | 0 | 10,000 | 0 | 15,625 | 15,625 | 15,625 | 15,625 | 25,000 | 62,500 | 86,250 | 103,625 | 118,363 | |
| Phone & Internet | | 1,200 | 1,200 | 1,200 | 1,200 | 1,320 | 1,320 | 1,320 | 1,320 | 4,800 | 5,280 | 5,808 | 6,389 | 7,028 | |
| Legal Services | 6 | 0 | 0 | 0 | 0 | 15,000 | 15,000 | 15,000 | 15,000 | 0 | 60,000 | 66,000 | 72,600 | 79,860 | |
| Accounting Services | | 0 | 4,500 | 0 | 4,500 | 4,500 | 4,500 | 4,500 | 4,500 | 9,000 | 18,000 | 19,800 | 21,780 | 23,958 | |
| Trade Shows | 7 | 0 | 40,000 | 40,000 | 40,000 | 44,000 | 44,000 | 44,000 | 44,000 | 120,000 | 176,000 | 193,600 | 212,960 | 234,256 | |
| Travel Expenses | 8 | 2,600 | 2,600 | 2,600 | 2,600 | 2,860 | 2,860 | 2,860 | 2,860 | 10,400 | 11,440 | 12,584 | 13,842 | 15,227 | |
| Advertisement | | 20,000 | 30,000 | 20,000 | 30,000 | 22,000 | 33,000 | 22,000 | 33,000 | 100,000 | 110,000 | 121,000 | 133,100 | 146,410 | |
| Prototypes | 9 | 30,000 | 30,000 | 30,000 | 30,000 | 33,000 | 33,000 | 33,000 | 33,000 | 120,000 | 132,000 | 145,200 | 159,720 | 175,692 | |
| Less: Depreciation | | 6,000 | 6,000 | 6,000 | 6,000 | 11,400 | 11,400 | 11,400 | 11,400 | 24,000 | 45,600 | 65,520 | 84,360 | 102,626 | |
| Website Development | | 15,000 | 2,000 | 2,000 | 2,000 | 2,000 | 2,000 | 2,000 | 2,000 | 21,000 | 8,000 | 8,800 | 9,680 | 10,648 | |
| Operating Expenses | | 330,300 | 324,000 | 488,300 | 409,200 | 629,295 | 640,295 | 629,295 | 640,295 | 1,551,800 | 2,539,180 | 3,084,217 | 3,672,717 | 4,311,826 | |
| Income from Operations | | 309,700 | 416,000 | 411,700 | 400,800 | 940,705 | 1,159,705 | 1,550,705 | 1,339,705 | 1,538,200 | 4,990,820 | 14,975,783 | 17,999,283 | 21,694,574 | |
| Financial Revenues | 10 | 0 | 279 | 375 | 371 | 361 | 847 | 1,044 | 1,397 | 1,024 | 3,649 | 4,495 | 13,482 | 16,211 | |
| Financial Expenses | | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | |
| Income Before tax | | 309,700 | 416,279 | 412,075 | 401,171 | 941,066 | 1,160,552 | 1,551,749 | 1,341,102 | 1,539,224 | 4,994,469 | 14,980,278 | 18,012,766 | 21,710,786 | |
| Taxes on Income | | 86,716 | 116,558 | 115,381 | 112,328 | 263,498 | 324,955 | 434,490 | 375,508 | 430,983 | 1,398,451 | 4,194,478 | 5,043,574 | 6,079,020 | |
| Net Income | | 222,984 | 299,721 | 296,694 | 288,843 | 677,568 | 835,597 | 1,117,260 | 965,593 | 1,108,241 | 3,596,018 | 10,785,800 | 12,969,191 | 15,631,766 | |

Notes

- The sales revenues are estimated based on our projections of our market share (number of customers), i.e. That each customer buys on average 1 unit yearly for an average price of 20,000 SEK
- Cost of goods sold is estimated at 50% of selling price on average
- In the first year, monthly salaries of 23,000 SEK per employee are paid to the three members of the management team. In year two we plan to add two employees with a monthly salary of 21,000 SEK and the third one in year 3, also with 21,000 SEK in monthly salaries. On top of that we assume a 10% yearly increase on salaries.
- We assume to start renting a space for our shop in Q3 of year 1
- Office equipment is mainly in the form of computers
- In the first year we plan to use the legal services provided by LU Innovation
- We plan to be visible at trade shows, like Stockholms furniture fair. We assume two shows per quarter at an average cost of 20,000 SEK per show.
- These expenses are mainly due to trips within Sweden, for example to search for future producers.
- We assume that we will produce three prototypes per quarter for an average cost of 10,000 SEK per unit
- We assume to put 50% of Net income on a short term bank account earning on average 1% interest

V b - Balance Sheet

| Assets | | Balance Brought Forward | Year 1 | Year 2 | Year 3 | Year 4 | Year 5 | |
|---------------------------|--------------------------------|-------------------------|----------------|------------------|------------------|-------------------|-------------------|-------------------|
| <i>Fixed Assets</i> | Office Equipment | 0 | 50,000 | 125,000 | 172,500 | 207,250 | 236,725 | |
| | Less: Accumulated Depreciation | | -25,000 | -62,500 | -86,250 | -103,625 | -118,363 | |
| | Shop Equipment | 0 | 110,000 | 176,000 | 237,600 | 296,560 | 354,376 | |
| | Less: Accumulated Depreciation | | -22,000 | -35,200 | -47,520 | -59,312 | -70,875 | |
| | Prototypes | 25,000 | 145,000 | 248,000 | 343,600 | 434,600 | 523,372 | |
| | Less: Accumulated Depreciation | 0 | -29,000 | -49,600 | -68,720 | -86,920 | -104,674 | |
| | <i>Physical Assets</i> | 25,000 | 229,000 | 401,700 | 551,210 | 688,553 | 820,561 | |
| Intangible Assets | 1 | 125,000 | 168,750 | 227,813 | 307,547 | 415,188 | 560,504 | |
| Total Fixed Assets | | 150,000 | 397,750 | 629,513 | 858,757 | 1,103,741 | 1,381,065 | |
| <i>Current Assets</i> | Cash | 25,000 | 270,371 | 614,738 | 3,364,402 | 13,552,114 | 25,841,508 | |
| | Short Term Placements | 2 | 0 | 554,121 | 1,798,009 | 5,392,900 | 6,484,596 | 7,815,883 |
| | Accounts Recievable | 3 | 0 | 1,236,000 | 3,012,000 | 7,224,000 | 8,668,800 | 10,402,560 |
| | <i>Debt Recievable</i> | | 0 | 1,236,000 | 3,012,000 | 7,224,000 | 8,668,800 | 10,402,560 |
| | Inventory | 4 | 0 | 0 | 0 | 0 | 0 | 0 |
| | Total Current Assets | | 25,000 | 2,060,491 | 5,424,747 | 15,981,303 | 28,705,509 | 44,059,951 |
| | Total Assets | | 175,000 | 2,458,241 | 6,054,259 | 16,840,059 | 29,809,251 | 45,441,016 |

| Liabilities and Owners' Equity | | Balance Brought Forward | Year 1 | Year 2 | Year 3 | Year 4 | Year 5 | |
|--------------------------------|---|-------------------------|------------------|------------------|-------------------|-------------------|-------------------|-------------------|
| <i>Owners' Equity</i> | Research Team | 5 | 90000 | 30000 | 30000 | 30000 | 30000 | |
| | Management Team | 6 | 45,000 | 15,000 | 15,000 | 15,000 | 15,000 | |
| | LU Innovation | 7 | 40,000 | 305,000 | 305,000 | 305,000 | 305,000 | |
| | External Investor | 8 | 0 | 1000000 | 1000000 | 1000000 | 1000000 | |
| | <i>Equity Capital</i> | | 175,000 | 1,350,000 | 1,350,000 | 1,350,000 | 1,350,000 | 1,350,000 |
| | Retained Earnings | | | 0 | 1,108,241 | 4,704,259 | 15,490,059 | 28,459,251 |
| | Net Income | | | 1,108,241 | 3,596,018 | 10,785,800 | 12,969,191 | 15,631,766 |
| Total Own Equity | | 175,000 | 2,458,241 | 6,054,259 | 16,840,059 | 29,809,251 | 45,441,016 | |
| <i>Current Liabilities</i> | Overdraft | | 0 | 0 | 0 | 0 | 0 | |
| | Bank Loan | | 0 | 0 | 0 | 0 | 0 | |
| | Other Long Term Debt | | 0 | 0 | 0 | 0 | 0 | |
| | <i>Long Term Liabilities</i> | | 0 | 0 | 0 | 0 | 0 | |
| | Accounts Payable | | 0 | 0 | 0 | 0 | 0 | |
| | Tax Debts | | 0 | 0 | 0 | 0 | 0 | |
| | Other Short Term Debt | | 0 | 0 | 0 | 0 | 0 | |
| | <i>Short Term Liabilities</i> | | 0 | 0 | 0 | 0 | 0 | |
| | Total Liabilities | | 0 | 0 | 0 | 0 | 0 | 0 |
| | Total Liabilities and Owners' Equity | | 175,000 | 2,458,241 | 6,054,259 | 16,840,059 | 29,809,251 | 45,441,016 |

Notes

- 1 We assume that our research team has been working on the software for 500 hours and 100 SEK per hour. After year one we assume a 35% yearly increase in intangible assets
- 2 We assume to put 50% of Net income on a short term bank account
- 3 We assume that accounts recievable at 20% of sales revenues. Our business model seeks a two week period of payment after delivery
- 4 Due to the fact that each item is unique, we do not keep any inventory
- 5-7 The equity distribution is as follows: The research team: 60%, The management team: 30%, Lu Innovation: 10%
- 8 We will seek for an external investor for approximately 10% equity share, diluting shares proportionately

V c - Statement of Cash Flows

| | Year 1 | | | | Year 2 | | | | Year 1 | Year 2 | Year 3 | Year 4 | Year 5 |
|-----------------------------------|----------------|-----------------|-----------------|-----------------|-----------------|------------------|------------------|------------------|------------------|-------------------|-------------------|-------------------|-------------------|
| | Q1 | Q2 | Q3 | Q4 | Q1 | Q2 | Q3 | Q4 | | | | | |
| <i>Operating Activities</i> | | | | | | | | | | | | | |
| Income from Operations | 309,700 | 416,000 | 411,700 | 400,800 | 940,705 | 1,159,705 | 1,550,705 | 1,339,705 | 1,538,200 | 4,990,820 | 14,975,783 | 17,999,283 | 21,694,574 |
| Depreciation | 21,000 | 6,000 | 34,000 | 10,000 | 35,825 | 35,825 | 35,825 | 35,825 | 71,000 | 143,300 | 199,290 | 247,297 | 291,864 |
| Change in Inventories | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Change in Accounts Payable | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Change in Accounts Receivable | -256,000 | -40,000 | -64,000 | 36,000 | -304,000 | -92,000 | -152,000 | 80,000 | -324,000 | -372,000 | -4,212,000 | -1,444,800 | -1,733,760 |
| Change in Physical Assets | -77,000 | 39,000 | -172,000 | 104,000 | -91,650 | -35,825 | -35,825 | -35,825 | -106,000 | -120,650 | -348,000 | -384,000 | -423,360 |
| Total Operating Activities | -2,300 | 421,000 | 209,700 | 550,800 | 580,880 | 1,067,705 | 1,398,705 | 1,419,705 | 1,179,200 | 4,641,470 | 10,615,073 | 16,417,780 | 19,829,318 |
| <i>Financial Activities</i> | | | | | | | | | | | | | |
| Financial Revenues | 0 | 279 | 375 | 371 | 361 | 847 | 1,044 | 1,397 | 1,024 | 3,649 | 4,495 | 13,482 | 16,211 |
| Financial Expenses | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Tax on Net Income | -86,716 | -116,558 | -115,381 | -112,328 | -263,498 | -324,955 | -434,490 | -375,508 | -430,983 | -1,398,451 | -4,194,478 | -5,043,574 | -6,079,020 |
| Total Financial Activities | -86,716 | -116,279 | -115,006 | -111,957 | -263,137 | -324,108 | -433,445 | -374,112 | -429,959 | -1,394,802 | -4,189,983 | -5,030,092 | -6,062,809 |
| Net Cash Flow | -89,016 | 304,721 | 94,694 | 438,843 | 317,743 | 743,597 | 965,260 | 1,045,593 | 749,241 | 3,246,668 | 6,425,090 | 11,387,688 | 13,766,510 |

Financial Ratios

| | Year 1 | Year 2 | Year 3 | Year 4 | Year 5 |
|----------------------------|--------|--------|--------|--------|--------|
| Operating Margin | 50% | 66% | 83% | 83% | 83% |
| Profit Margin on Sales | 36% | 48% | 60% | 60% | 60% |
| Asset Turnover | 2.5 | 1.8 | 1.6 | 0.9 | 0.7 |
| Return on Assets | 125% | 117% | 131% | 77% | 58% |
| Return on Capital Employed | 36% | 165% | 155% | 100% | 70% |
| Return on Owners' Equity | 26% | 119% | 112% | 72% | 50% |

VI - Risk Analysis

| | Internal Risks | Probability (p) | Consequences (c) | p x c | Action |
|-------------------|---|-----------------|------------------|-------|---|
| <i>Technical</i> | Software Problems | 100% | 1 | 1,0 | Axel Nordin and in year 2 a programmer to be hired |
| | Software not Compatible with CNC-Machines | 10% | 8 | 0,8 | Axel Nordin and in year 2 a programmer to be hired |
| | Software Developer Departs | 20% | 9 | 1,8 | Add clause in agreement for software manual by May 31, 2011 |
| <i>Economical</i> | Insufficient Financing | 50% | 10 | 5,0 | Management forgoes wages, employs bootstrapping methods |
| <i>Staff</i> | Departure of a Management Member | 40% | 7 | 2,8 | Hire a replacement |
| | Lack of Time From Researchers | 30% | 7 | 2,1 | Hire programmer and designer |

| | External Risks | Probability (p) | Consequences (c) | p x c | Action |
|-------------------|-------------------------------|-----------------|------------------|-------|--|
| <i>Technical</i> | Competitors Copy our Idea | 20% | 8 | 1,6 | Develop product and add new features |
| <i>Economical</i> | Decrease in Disposable Income | 15% | 6 | 0,9 | Create products available to lower income people |
| | Loss of a Supplier | 40% | 9 | 3,6 | Diversify supply with reliable manufacturers |
| <i>Market</i> | New Entrants | 90% | 4 | 3,6 | Develop product and add new features |

Note: Probability: 0-100%, Consequenses 1-10



References

1. The domestic furniture market in Sweden, CBI market survey, October 2009. <www.cbi.eu>
2. "Inkomststatistik - Totalräknad." Statistiska Centralbyrån. Statistiska Centralbyrån, 21 jan 2010. Web. 21 Oct 2010. <<http://bit.ly/bVlgvk>>
3. Orsato, R. (2009). Sustainability Strategies: When Does it Pay to be Green? Houndmills, Basingstoke, UK: Palgrave Macmillan.



shape▼yard