Knitwear On Demand

Business Plan

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Executive Summary

Personalization services are a trend, and computerized knitting offers a great opportunity for the quick production of unique garments. However, due to processes in place within knitting factories it is difficult to realize knitwear on demand business models at the moment, especially for smaller companies. As part of Jacqueline's final Master project she has developed a software tool that will speed up the development of a design within the knitting factory and therefore save money on production and development. The key is in providing the factory with a digital design which is suitable to import in the software that they already use, rather than having to digitize a design from scratch within the factory. This enables us to produce custom pullovers and tops for around €70 and small series for on average €55 per product without having to make high investment costs of purchasing our own computerized knitting machines. Because production is on demand we also don't need to invest in stock and will never overproduce, further reducing our costs.

At the moment we have confirmed with Stoll, one of the main producers of flat-bet knitting machines and software, that our strategy would speed up the process within the factory and save costs. A developed demo of the software has been shown to two knitting machine experts at the Tilburg Textile Lab, which also confirmed that the exported files can indeed quickly be used in their software and that it would give designers more control over the design process. In July we will do a test-run of the software in collaboration with the Textile Lab.

The software will be used as an online app, where consumers and small fashion brands can design their own clothing. They can either pay us to produce and deliver their product or they can download their design for €5 or have unlimited downloads for €12 per month. We are planning to gain knowledge about seamless (3D) knitting and other types of knitting machines and their corresponding file types to be able to offer more types of companies the possibility to use our software in their existing process. This will expand our target market over time.

From now until our initial sales in 2018 we are mainly an IT company, developing the software using help from family, friends and partners. Our partners currently include The Girl and the Machine and Nitto Amsterdam, both new brands in the process of launching custom knitwear services. In this first phase we will also partner with a knitting factory, which will later handle full production, for testing the software by producing samples to make sure all customers have a perfectly fitting garment. By doing these tests we limit intervention necessary from the owner during the design and production process later, so she can focus on maintaining the software and arranging processes within the business. This is important because the first year we will not yet earn enough money to hire employees. Instead, software development and creating new designs is outsourced to externals until 2019, after which we will hire a software developer and fashion designer. To start-up the owner will invest €7.000, we will take a loan from family and friends of €8000, and we will require another loan of €6000 to develop the software and designs, and start marketing and sales. All loans will be paid back with interest in 2019.

Our main marketing tool is our pop-up stores, in which we showcase our work and that of partner fashion brands, as well as enable customers a full experience in designing their clothing. We will measure them and enable them to try different fabrics, textures, and designs, and generally accompany them in the process. In 2020 we plan to invest in two second-hand 3D knitting machines and a 3D scanner to open a permanent store where customers can go and have their garment produced the same day. Production over our capacity is still outsourced to external knitting factories.

Within our software program we also offer the possibility to customize using extensions. This is mainly for fashion brands that wish to achieve something specific which is not possible with the current version of the software; they can write their own code with our code base and deploy this online within our web-app. This enables companies to quickly achieve their goals, protects us from others developing the same type of code base, and provides us with a continuous source of revenue from memberships. In the future we aim to grow our software into a platform for custom knitwear brands, in which they can develop their interface and sell their own custom products.

Rabobank has confirmed that even though they do not have any specific information about custom fashion, that this is a rising trend. All over the world custom clothing brands are popping up with their own unique strategies. Custom knitwear brands exist, but always targeted at consumers and very limited in their possibilities due to the complexity of computerized knitting. Also, developed software in this area is either kept for the company's advantage or sold for high prices and therefore only available to large companies. Instead we now offer a complete package to consumers and small companies, for which the offering is currently very limited. According to research from Deloitte 36% of consumers is interested in personalized products or services, and 19% have already purchased a custom piece of clothing. A rise in offering will make more people interested and allow people to purchase more custom garments, enlarging the market for all custom fashion brands.

Our vision is to create the go-to software for both computerized and manual flat-bed knitwear production and become a successful custom fashion brand within five years. Within three years of sales we aim to have a membership base of 150 companies and sell 1500 garments each month through our online and physical stores in Europe. This results in a gross profit of €40.000 each month and an operating income of €25.000, enabling us to purchase two knitting machines by the end of 2020 and start our permanent fashion store.

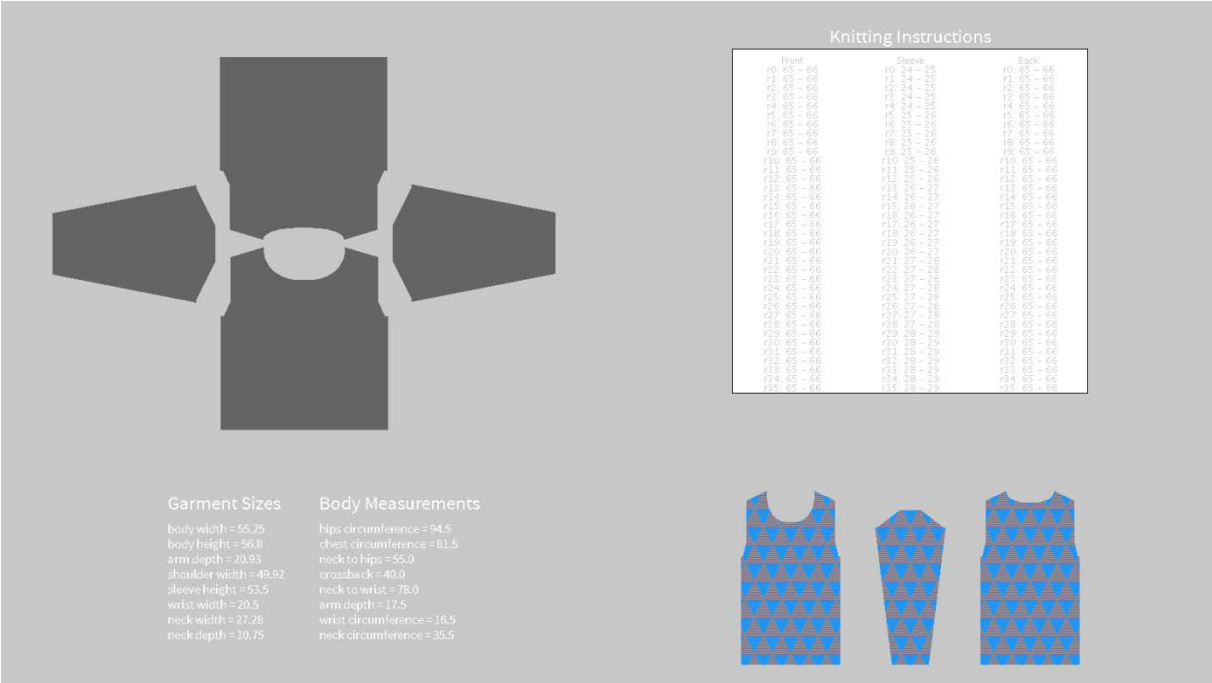
1. The Value Propositions of the Company

The fashion industry uses a traditional production process which requires a lot of labour and produces large amounts of waste. Computerized flat-bed knitting technology enables the production of fully fashioned or seamless (3D) garments without creating any waste and using fewer labourers. Production is often outsourced to specialized production facilities, as these machines and the software used to program garments are too expensive to purchase, especially for smaller companies, and are too complicated to use without an education in this field.

At the moment processes in place do not support on-demand production, but are focused on production of large volumes to cover the costs of sample programming and knitting. The programmer in the facility digitizes a design provided by a fashion designer and makes adjustments based on their feedback on produced samples. The designer has little direct control, and this collaboration takes time and money. Only high sales prices are able to cover for the high costs of this process in smaller series, and on-demand processes would require even more as each unique product has to be re-programmed. This makes on-demand knitwear a difficult business model to achieve, as has become apparent from conversations with business owners currently trying to bring knitwear on demand to the market.

Jacqueline Nanne has been working on a solution to enable knitwear on-demand business models. The main problems in the current situation are the time it takes to digitize a design and that all of this has to be done within the production facility. Enabling the designer to digitize designs from their own workspace would give them more control over the process and allows programmers within the production facility to focus on implementing their engineering skills to prepare the design for the knitting machine. Jacqueline is developing a software tool to achieve this. Using this software will reduce costs and waste due to mistakes, and speed up the development of new designs and on-demand production.

Demo 1: stitch pattern design



Demo 2: generating a garment

Unique Selling Proposition

Using the developed software we can offer custom knitwear to consumers for €95 on average and small series to smaller fashion brands for around €65. Computerized knitting machines located in Europe enable us to quickly produce custom orders without creating any waste in the process. In 2018 we will start production of fully fashioned knitwear and we will develop our software to also offer seamless (3D) knitwear before 2019. Standard users of the software will be able to choose between options such as the design, neckline, stitch pattern, and fit to create a completely unique item especially made for them. Expert users, such as fashion designers, are able to create and adjust their own stitch patterns and knitwear designs on a more detailed level for more freedom and possibilities. Fashion brands or consumers that arrange their own production, whether this is outsourced or done manually, can download their designs for €5 per download, or get a membership with unlimited downloads for €12 per month.

We guarantee a good fit using the standard software, so customers can always return their garments under standard regulations. This also enables us to learn and adjust the programming of the design. If the customer has changed the design as an expert user or used unverified extensions we can only accept returns if the garment has not been knit according to the provided specifications. In our online community users can come together and share designs and extensions, discuss possibilities for improvement, and ask for support. Designs and extensions created by our user base will remain property of the creator, however they can be verified by us and the user community to include in our full warranty policy. Once 50 unique garments have been correctly produced using an extension it will receive a verified status.

Unique Welling Proposition

Over a year of research and development in Jacqueline's final Master project she has gained knowledge about the knitwear industry and manual and computerized machine knitting, and made connections with different brands, institutions, business experts, software engineers and fashion designers. At the moment we have confirmation for academic interest from the Aachen Institute for Textile Technology and for the need for such a software application from on-demand

fashion brands The Girl and The Machine and Nitto Amsterdam. We were also able to confirm with Stoll and Tilburg Textile Museum that the files the current software prototype is creating will speed up the process of fully fashioned knitting within the production facility.

Unique Business Proposition

All of our production is outsourced to knitwear production facilities within Europe and most of the design work is prepared by our customers through the software online. So, to manage the business we maintain the software and arrange production and shipment on demand. Next to this we will launch pop-up stores as part of our marketing strategy. This can be managed by the owner with additional external support, such as outsourcing programming or fashion design work.

All of our production is made to measure, which will reduce returns and cut the need for sales. Production is outsourced and expenses of production are on-demand, so we will not need to invest in machinery or stock. Enabling the customer to create and receive their design with little intervention from us allows us to easily keep up with a large amount of orders. Therefore, we will not have high investment costs, but we do have the ability to grow quickly. When we have made enough profit we will invest in a computerized 3D knitting machine with software to arrange our own production and reduce direct production costs. This could be a collaborative investment with partners.

Our pop-up stores are mainly a marketing tool to boost sales and gain brand awareness. We can go where the people are by following events and make ourselves known throughout The Netherlands and the rest of Europe. Also, it enables us to see where is a higher or lower interest for custom clothing for future locations, giving us a competitive advantage over a permanent store.

2. Study of the Market

Although later we are planning to expand to other the rest of Europe, we will be focussing on the Dutch market for the first year. The Dutch population is 17.1 million and growing. However, many statistical data available at the Central Bureau of Statistics are based on households, so it is worth to mention that the Netherlands consists 7.7 million households and 62% of them are households with more than one person.

Our target market is those households which are spending between 80 and 150 euros on clothing in each month. These customers are mainly interested in the lower premium segment of luxury or high quality clothing. By assuming that the portion of income spent on clothing is similar for different income level, our target group are those households which have at between 26,000 and 48,000 euros disposable income yearly. They are 36,5% of the Dutch households, roughly 2.8 million households, 6.2 million people (2.2 people per households on average). Within this we will be focussing on an age range of 25 to 40 years old, as these are the most interested in custom products and likely to reach this income.

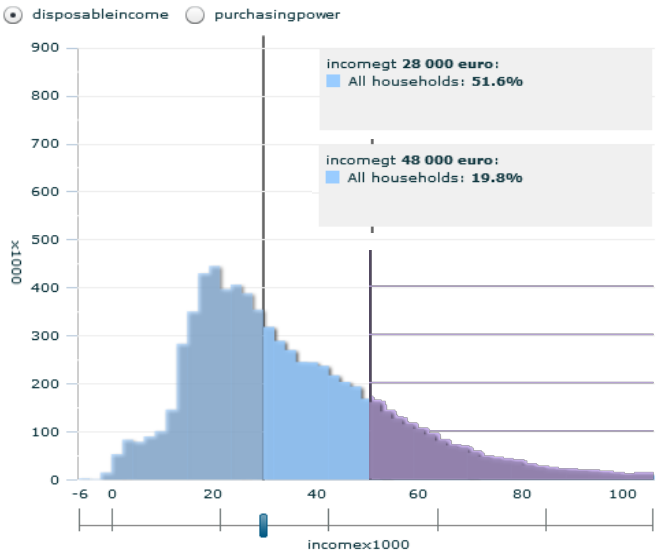


Figure 1: Distribution of income in Dutch households (Our target group is marked with light blue) source: CBS

Important trends

Many of the trends described here have been derived from ING Bank's trend report and future vision for the fashion industry, which has been published in 2013. Other sources have been added for clarification and to make the trend analysis more up to date. We have looked for more detailed information about custom fashion through the Rabobank, however we received the following reply (translated from Dutch): "Custom fashion is certainly a trend in the retail sector and fits with the needs of the customer concerning special and personalized products. However, this is a very specific market of which we do not have any specific information".

The table on the next page shows the most important points of our trend analysis. For the full trend report please review Appendix A.

Even though the world population is growing and therefore demands more clothing, the European market is shrinking and ageing. However, according to research from Deloitte 36% of consumers is interested in custom products, and 46% in the age range of 25-30 years old. Only 19% of consumers have already purchased custom clothing in some form, which shows the difference in demand and offering that is appealing to consumers. People will always need clothing, and even if the market is shrinking the market is still significant and there is a rising trend for custom clothing.

Welfare predictions are positive, however people are not yet spending more on fashion. It also seems as if sales prices are not going up, whereas the costs of raw materials is rising. They make up

Demographic	Economic	Social	Ecological	Technical	Political
• growing world population; • growing global demand for clothing; • the European population is shrinking and ageing; • urbanization; • growing middle class.	• positive welfare predictions; • people are not spending more on fashion (yet); • increasing costs of raw materials; • low costs and high speed rule the fashion industry; • more online sales.	• fast-fashion or premium, the middle section has trouble; • speed and low-cost strategies put pressure on the supply chain; • companies are unable to check their entire supply chain, leading to unethical situations.	• 3% of all CO2 emissions is due to production and use of clothing; • high usage of water and chemicals for apparel production; • fabric waste in the cut-and-sew process; • there are initiatives for collecting and recycling clothing.	• the apparel industry uses a low-tech approach with a lot of labour; • there are technical solutions but they are expensive to implement; • increasing quality of web-stores and their services; • data gathering.	• a decline in physical stores causes vacancies; • the local government is responsible to avoid building depravation; • with technological advancements the apparel sector could play a bigger role in The Netherlands.

for this loss through speed and low-costs to attract more customers. According to data from CBS Dutch consumers spend on average 3.7% of their net income on garments. This number is for all ages and genders and all types of garments including ready-to-wear, made-to-measure and sportswear. Excluded from this percentage are for instance shoes. We do not have detailed information about how this percentage is divided in terms of pieces of clothing, however from ING's trend report we know that a large part of consumers goes for low-quality and inexpensive clothing. It is up to the customer to decide whether to purchase multiple disposable and fashionable low-quality items or go for fewer high-quality items which last longer.

The speed and low cost at which large companies can bring their product to market puts pressure on their supply chain. They implement all kinds of strategies to cut costs, making it very difficult to check their entire supply chain for unethical and environmentally unfriendly processes. At the moment 3% of all CO2 emissions in the world is caused by the production of clothing. The production process often involves chemicals and requires large amounts of water, next to the waste produced in terms of raw material due to the cut-and-sew process. There are, however, good initiatives for collecting old or left-over garments to recycle them. For instance Frankenhuis is able to recycle clothing back into yarn, enabling a discarded product to be used for a product with the same quality. If costs allow it we will also make use of this recycled yarn, but above all each product we produce should have a recycling option.

Because of improvements in technology we are now able to use seamless knitting technology and create garments without any waste and with little intervention from labourers. However, the fashion industry is still characterized by a traditional and low-tech process, often involving a lot of labourers. Technological solutions are expensive to implement end requires high investments which they often don't have. Therefore the fashion industry is stuck, and needs solutions to make change easier. We offer one of the solutions necessary to change this.

Future Scenarios

In ING's vision for the apparel industry in 2025 they propose two future scenarios according to research and trend analysis. These are contrasting scenarios, so they expect the future will hold

some kind of combination of the two. Here you can find a brief overview of these scenarios, their elaborate description is in the appendix.

'PRICE' scenario	**'SMART' scenario**
• More people, more fast fashion; • Scale and low cost are the most important success factors in the apparel industry; • Growing ecological footprint; • Production of clothing in low-wage countries; • Limiting role of technology in the apparel industry.	• Technological developments lead to new business models • People make more sustainable choices in general • People are willing to pay more for high quality and sustainable clothing • Integration of online and offline channels • More local production

In the PRICE scenario, volume and low cost remains important, rising economies will be the new main market and most of the production will remain outsourced in countries with cheap labour. Production chain remains oblique and consumers keep being passive in forming the market and communicating their special needs.

In the SMART scenario assumes that European consumer are keep shifting towards making more sustainable choices in general and they are willing to pay more for sustainability and quality. Also, technological developments will lead to new business models to satisfy this demand. People are willing to pay more for high quality and sustainable clothing and production is done more locally. Online and offline distribution channels have integrated.

With our business we try to stimulate the SMART scenario.

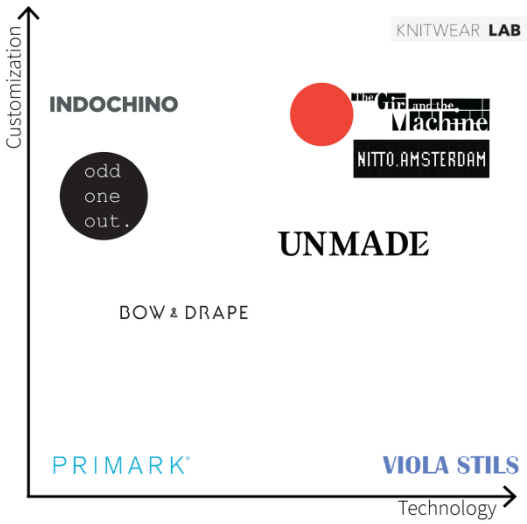
Competition Analysis

Category	Potential Competitors	Relative Strengths	Relative Weaknesses
Comparable Technology	Unmade	Automated knitwear production Using pixel-based images	Limited to a few colour patterns and only in standard sizes
	Stoll M1 Software	All options for any garment design	Only usable for experts
Comparable Functionality	Adidas Knit for You	Large company Established brand Pop-up stores	Only physical stores, no web channel
	DesignAKnit	Simple knitwear pattern and stitch pattern design	Only for manual knitting
Same market segment (The Netherlands)	The Girl and The Machine	Made to measure garments According to preferences Timeless designs	High production costs
	Nitto Amsterdam	Made to order bags Personalized products	High production costs
	Knitwear Lab	Knitwear design and production services	Extensive collaboration at the production facility, therefore high costs.

Direct Competition (same market segment)
We will work together with our direct competition to launch the concept of knitwear on demand in The Netherlands. The Girl and The Machine (by Rosanne van der Meer) and Nitto Amsterdam (by Tirza Brems) are both custom knitwear brands currently in the process of starting up. To stimulate an optimistic future we believe that having more choices for customers and more exposure to

fashion on demand could change people's minds about the currently trending fast-fashion. As these are also our partners we have explained their business and their value in further detail in chapter 4 the winning team.

Next to this there is also companies which offer design and production services of knitted products. Knitwear Lab is one of these companies based in The Netherlands. For a high price they offer services for custom knitwear pieces mainly for fashion designers. They have their own knitting machines here as well as in eastern Europe to cover for more production. They also offer education services for learning how to work with the knitting machines and seamless knitting specifically, as well as how to work with the software. They use Stoll knitting machines for all their production and follow a traditional process of extensive collaboration with the designer. This results in very high costs per knitted product.



Indirect Competition (comparable technology or functionality)

Custom fashion

In Japan Shima Seiki has launched their own boutique store for custom 3D knitted products, which customers can design themselves. Also, Adidas has launched a pop-up store in Berlin in collaboration with the Aachen Institute of Textile Technology. Here they 3D scan the body of the customer and automatically knit a garment on their in-store knitting, that completely fits the customer. For now this is only a pilot, however in the future if they open more of these pop-up stores and customers will get more design options they could become a strong competitor. Other than these there are no brands that I know of except our partners that use 3D knitting technology for on-demand production. There are brands that use 3D knitting technology to offer seamless knitted products (Viola Stils), offer custom fully fashioned knitted products (Unmade) or other custom fashion (Bow & Drape, Indochino, Odd One Out). There is also the fast-fashion brands that we compete with (Primark, H&M), which are able to provide many design choices for low prices, and premium fashion stores (De Bijenkorf), which sell more expensive clothing from high-end brands.

Software

There is good software available for handmade knitwear design (DesignAKnit), however these do not offer the option to export the design into a file that can directly be used at the factory. The software used in the factory such as Stoll M1 is often too expensive for a small company to purchase and also requires expert programming knowledge to be used. At the moment if the knitwear designer wants to do any designing at home they are advised to use Adobe Photoshop to create bitmap images. In these images each pixel represents a needle of the knitting machine, and the colour of the pixel represents the handling the machine should do with the needle. Pixel-based programs such as Photoshop are less than ideal because pixels are square and when knitted stitches often have unique measurements, resulting in a distorted image. Also simple things such as adding and removing rows that are essential for knitwear design are not included. Other companies that offer custom industrially-produced knitwear such as Unmade and Varitex have developed their own software to automate the production process, but have not made this software public. The software we are developing is the only software that is available for smaller companies to achieve unique or small series industrially produced knitted products.

3. The Challenge

Mission

We offer customizable knitted fashion on demand. According to the measurements and preferences of the customer the garment is produced in Europe and distributed directly to the European market. All garments are knitted on computerized knitting machines using high quality yarns from sustainable sources. This production process has a low waste output and requires a minimum need for labour, which makes it more sustainable than normal fashion production strategies. To enable this production process we have created our own knitwear design software for customizable industrial knitwear production. This software is accessible to both consumers and businesses. Thus we enable people to choose for high-quality and sustainable fashion products especially made for them and enlarge the market of customized fashion by enabling others brands and the knitwear industry to develop in this direction as well.

Vision

Our vision is to create the go-to software for both computerized and manual flat-bed knitwear production and become a successful custom fashion brand within five years. We would like to change processes within the fashion industry to become more sustainable, and therefore we stimulate the knitwear industry to better accommodate knitwear on demand business models and to create a larger offering in custom clothing. The software tool will create convenience for us, small and large fashion brands, and production facilities, so we can all work on a more sustainable future. As we have the only software available for knitwear on demand we will grow our software into a platform for custom knitwear brands to sell their custom products.

Scope

We will be selling business-to-business as well as business to consumer within Europe. Our marketing will mainly focus on The Netherlands in the first year and then we will expand to the rest of Europe. To stimulate both the demand and offering for custom clothing we target a broad market of both consumers and small fashion brands. In terms of pricing we are at the lower end of the premium clothing sector, so we will attract consumers that go for high-quality clothing rather than fast fashion or luxury clothing, and attract brands that have this same type of offering. Online orders are mainly transactional, however if customers would like a more personal experience they can come to one of our pop-up stores.

Main Objective

We want to become a successful custom fashion brand and be the only one to facilitate computerized custom knitwear production and make it more accessible for small fashion companies. We will stimulate a more sustainable fashion industry and allow people to choose for more sustainable and better-fitting options. This way we hope to move away from fast-fashion and towards a more sustainable future as described in the SMART scenario of chapter 2.

Values

We use high-end technology to offer fashion in a more sustainable and personal way. Transparency within this process is very important to us, to ensure sustainable production and fair wages throughout the production chain. Customers pay for the value of the garment instead of the value of the brand, so a longer or wider sweater in wool yarn costs more than a small size in cotton. Being able to show customers exactly how much yarn and time is necessary for production adds to our transparency and enables customers to make choices based on their own budget. We also make sure that all the garments we produce can be recycled later in its lifecycle. Once we have

enough sales we can collect worn garments we have produced and recycle it back to yarn to further increase our sustainability.

Working together with other companies that have the same vision we try to achieve a more sustainable fashion industry. We collaborate with partners and our user base to develop new designs, market our products, and launch pop-up stores. We believe in open innovation, so we stimulate conversations among and with our user base and we reach out to partners to achieve things together. Input such as extensions or designs will always remain property of creator. Users can create an account to save their data or upload extensions, which will be treated as confidential until shared. If the user designs a garment without creating an account all confidential data will be deleted from our servers one month later.

Unique Business Model

<table>
<tr><td>Own Resources</td><td>Value Capturing</td><td>Value Proposition</td><td>Customer Segment</td></tr>
<tr><td>• Entrepreneur has knowledge of knitting machines, fashion design, and programming, and can manage communication between parties;

• Entrepreneur has a network in the knitwear industry.</td><td rowspan="4">• Using high-end technology to produce locally and using a short and fair process;

• With our own developed software costs on garment development and production are reduced, which enables us to sell our products for regular prices;

• With outsourced production and our software to facilitate designing there is little direct intervention necessary from us;

• With on-demand production at existing factories we have low initial investment costs and no risk for left-over stock;

• Using industry associations to reach businesses;

• Collaboration with fashion designers to create new designs.</td><td>We offer made to measure clothing that always fits, lasts for years and is completely your style;
Fashion brands can produce small volumes at regular cost or download their design and arrange their own production.</td><td rowspan="4">• The business focusses on the European market;

• We target a broad market of both consumers and small fashion brands;

• In terms of pricing we are at the lower end of the premium clothing sector;

• Customers go for high-quality clothing rather than fast fashion or luxury clothing;

• Hand- and manual machine knitters are also able to download their own custom patterns.</td></tr>
<tr><td>Insourcing</td><td>Customer Relations</td></tr>
<tr><td>• Family and friends can help with more complicated programming work.</td><td>• We keep customers with an account up to date about new developments through our newsletter;

• In our online community we offer support and the possibility for conversation about improvements;

• Special offers can be made to returning customers or their friends;
• Allow for software modifications and new designs by our users.</td></tr>
</table>

Outsourcing		Distribution Channel	
• Production is outsourced to European knitting factories; • Creating new scalable designs is done in collaboration with a fashion designer and with the community.		• All orders are placed on the website after creating a design using the software; • Pop-up stores at events will boost sales and help gain brand awareness.	
Effect on Costs	Effect on Cash Flow		Effect on Revenues
The software can be developed with very low initial costs, and because production is outsourced and on-demand starting up the company requires little investment.	Cash flow is probably not consistent and dependent on pop-up events, seasons, and new developments. However, customers pay before production, which enables us to handle peaking volumes. Because of this we also have no sales and can sell each item for their value price. Using the gross profit the owner is paid and investments are made in the development of the software and gaining brand awareness.		With relatively high pricing we receive high revenue per sale, especially for a batch order from small fashion brands. The broad target group enables us to focus on the European market.

Strategy

We strongly differentiate from regular fashion brands in the way customers select and buy their clothing. Also, normally production requires a lot of collaboration, but we can give the designer more control over the process and reduce expenses on sample-making, differentiating ourselves from usual production facilitators. Fashion brands can choose if they would like us to arrange production or save costs by downloading the design and approaching a production facility themselves.

Even though little direct intervention is necessary for the production of designs, we focus on customer intimacy over operational excellence. We value that the customer gets exactly what they want and offer support to achieve this through our pop-up stores and our online community. As customers will always need new clothing in the future, we would like them to come back and provide special opportunities for returning customers, such as discounts or early access to new designs. Allowing a part of our users to test new designs also enables us to optimize the program when mistakes are made as a pilot test, while still gaining revenue and giving loyal users special attention.

Because we outsource most of the work to the production facilities and the users through our software, we are able to focus our attention on relationships with customers and partners. Our users are able to create new designs as well, resulting in a larger offering to all customers over time. Together with our user base designers can develop the garment programming, but the design will remain theirs and be connected to their name. Customers that have used the design can endorse it if it fits well, and after 50 users have endorsed the design it will covered by full warranty.

In the future these user-generated designs could refer to external fashion brands that organize production, so the software becomes a platform for custom knitwear brands to sell their products. We will also take a step further with customer intimacy and create a fully experiential store

including two 3D knitting machines and a 3D scanner. We will measure people using the scanner and design their personal garment together with the customer. They are able to feel different materials and textures, and try out different designs to get to a final design. They take their measurements with them on a USB stick or create an account to save their measurements. The garment is produced within a few hours, so the customer can pick up their garment the same day or see it being produced within the store.

Companies or consumers can also develop their own extensions, which can be used in combination with our software online. This way functionalities that are not supported in the current version of the software can always be developed, avoiding that companies have to create their own software from scratch. Examples could be a 3D view, showing pressure on the body, or an adjusted interface. This way our software is also more protected as copying is more expensive than creating their own extensions, while they can still get or create all the functionality they need. Shared extensions can be used by other users as well, and we encourage them to give feedback to the creators. To avoid returns for mistakes due to faulty extensions we cannot accept returns when unverified extensions are used in the design of the garment, unless it is not produced according to the specified measurements. This is also the case for garments designed as an expert user, which allow for more freedom in design but also higher chances for mistakes.

Using our pop-up stores to follow events and using a crowdfunding campaign we are able to reach early adopters and start sales. These people will talk about their experience and may post this online, and if their experience was positive they will return for new clothing. Word of mouth and our pop-up stores are our main strategy to steadily increase sales. We will address small businesses through associations such as Modint and ClickNL, which regularly organize meetings among members and have a newsletter or magazine. See chapter 4 for more information about these associations.

4. The Winning Team

The success of a start-up depends on three important factors, which contribute to the sustainability of the business: the entrepreneur who has the drive and ambition to make a difference, the people supporting the success of the company, and the business parties that maintain a close and intensive relationship with the company. In the following, we will explain the role of the entities above and how they impact our knitwear on demand business.

Entrepreneurial Qualities

Jacqueline Nanne is the entrepreneur and she is strongly driven by the following vision:

"The world is constantly changing, and I believe the design of new services, products, experiences, and processes can support an optimistic future for society and individuals. This includes striving for a more sustainable planet for people and the environment, and to empower people to make the most of their opportunities.

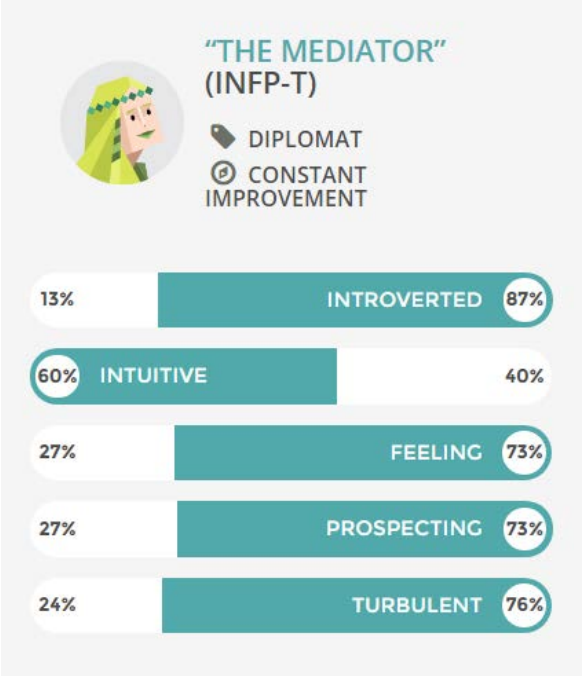
Environmental and social impacts play a role in every stage of a product's life cycle, but most of the decisions concerning this are made during the development of the product. As an industrial designer I am able to influence materials and technologies used in the manufacturing process, how the product should be offered to and used by consumers, and whether the product can be re-cycled or re-used. I believe I should use this power to do good, and to consider environmental and social impacts in decision-making throughout the development of a product and business plan."

To offer a broader understanding of Jacqueline's personality and characteristics, we will refer to Myer-Briggs Type Indicator. This is an introspective self-report questionnaire, indicating psychological preferences in how people perceive the world around them and make decisions [1]. Of course, personality is just one of the aspects that dictate the decision-making process, as actions are also influences by the environment, experience and individual goals.

Jacqueline's personality type is INFP-T, which stands for Introversion, Intuition, Feeling, Perceiving and Turbulent. Introverted types prefer solitary activities and get exhausted by social interaction. Intuitive types are imaginative, open-minded and curious. They prefer novelty over stability and focus on future possibilities. Feeling individuals are sensitive and emotionally expressive. They are more empathic and less competitive, and focus on social harmony and cooperation. Prospectors are good at improvising and spotting opportunities. They tend to be flexible and nonconformists who prefer to keep their options open. Finally, Turbulent types are self-conscious and sensitive to stress. They are success-driven, perfectionistic and eager to improve. This result if also known as the Mediator and aims at constant improvement. [2]

People with INFP personalities are deemed as idealists, as they constantly seek ways to make things better. On the outside they look calm, reserved, or even shy, but they are very passionate and driven by the goals they believe in. INFP personality types are characterized by a set of strengths and weaknesses, which Jacqueline identifies with.

The Myer-Briggs Type Indicator provides some insight into the weaknesses that she deals with. One of them is being too idealistic: as she has high expectations from herself and the people around, she is prone to disappointment. At the same time, she can commit so devoutly to a cause that she will work herself to exhaustion, becoming absorbed with what she believes in. Finally, her type is characterized by sometimes being private, reserved and self-conscious, which can make her hard to get to know. As Jacqueline is aware of the pitfalls of her character, she can overcome through discipline and paying attention when they occur. She has been practicing with this and has developed habits to deal with such situations.



In terms of strengths, INFP are characterized by being, on a positive note, idealistic. This means that she displays an optimistic attitude, and a resilient attitude in the face of challenges. This is of utmost importance, as it enables Jacqueline to overcome the obstacles which come with setting up a venture (such as financing, dealing with the unknown, building a strong team) and push forward to create a successful business even though her introverted type. Another important aspect is that she displays a democratic approach, ensuring that the perspectives of her teammates and partners are heard and considered to be put into practice. She is able to create a safe environment in which people are comfortable to speak up and voice their ideas and concerns, such that discussion and productive arguing is enabled. Contributing to this is the fact that she is open-minded and flexible, as she will support others' ideas and appreciate people who are decisive and can think for themselves. What is more, Jacqueline has a creative approach to problem solving, being able to see things from an unconventional perspective and trusting her intuition. She will always put all her passion, energy, time, thoughts and emotions into the projects that she believes in. Dedicated and hard-working, she has a long-term vision which keeps her going when challenges arise, especially when she feels that what she is doing is meaningful.

By looking at these strengths and weaknesses, we can see that Jacqueline is a driven, hard-working person, who dedicates herself to work and displays a solution-oriented and proactive attitude. Although she might find it challenging to trust others and would prefer working alone, her determination to achieve her goals and create meaningful change through the knitwear on-demand business idea will enable her to work efficiently together with her team. As John Maxwell once said: "One is too small a number to achieve greatness".

Internal Situation

The company culture will be based on openness and transparency. We aim at building a friendly community, while developing a sustainable processes. If we could define ourselves with a few key words they would be: sustainable, transparent, community, personal.

In the first three years, Jacqueline will rely on the help of family and friends, who can help with programming and accounting. By asking for help from family and friends, she will receive the necessary support and commitment, at the same time saving money in the start-up stage. Before starting to work together, an agreement will be signed, in which the parties involved will agree to

keep their distance and sustain an objective decision-making process. As the business will grow, it will be necessary for a programmer and a fashion designer to be hired. They will have the necessary skills to take the business to the next step, as well as the time required to invest in this project. These employees will be hired in 2019.The people that will be hired will have to show high ambition and be as driven as Jacqueline in terms of creating change. They should also display the same commitment, but at the same time be practical and be solution-oriented. They should be decisive and assertive, able to work independently.

The programmer that will be hired should have at least three years of experience in the field. He or she will be responsible for preparing the design for the knitting machine (for the stage in which our company will also play the role as a production facility) and for implementing specific add-ons and patterns for the base software, as requested by our community. Specifically, the programmer should have knowledge in working with Shima Seiki Apex3 and/or M1plus Stoll software, as well as understanding how to use both fully fashioned and seamless knitting machines of these brands.

The fashion designer should have at least five years of experience in the field and have an education as fashion designer. He or she should be creative and practical, able to draft patterns correctly. The designer should specialize in ready to wear fashion, and the range of skills should include: Computer Aided Design (CAD) of fashion, understanding of fully fashioned and seamless knitwear design and pattern-making, experience with textile design on a structural level, and preferably has experience with either Shima Seiki or Stoll knitting machines.

An external business expert will be part of Jacqueline's inner circle, providing advice and helping her devise a strategy. This expert should have worked with the textile industry and have experience with coaching entrepreneurs and helping them build a successful business. This person should be objective, approachable, willing to help and stir the venture in the right direction and have effective communication skills.

External layer

There are several companies which compose the external layer for our company. We plan to work intensively with these companies, in terms of exchanging knowledge, creating and accessing valuable networks and building valuable partnerships in order to offer more choices and a better exposure of on-demand knitting to customers.

The Girl and the Machine is a start-up by Rosanne van der Meer, who uses 3D Knitting in an on-demand system with the purpose of making personalised garments for everybody. They work with Shima Seiki machines, one of the two largest flat-bed knitting machine and software manufacturers, making clothing with a custom fit after the order has been placed. A similar company called Nitto Amsterdam by Tirza Brems also offers custom knitted products. Tirza and Rosanne have been working together for years now to bring 3D knitted custom products to the market. Nitto Amsterdam describes itself as the first step towards sustainable and locally produced textiles, with a focus on accessories and furniture. They work with Stoll knitting machines, the other large flat-bed knitting machine. They produce thicker fabrics which could not be produced on a regular knitting machine, creating items such as bags, pencil cases and laptop sleeves with custom prints. With

both these companies we can exchange information and learn from each other. Together we can spread awareness about custom knitwear and its benefits in terms or reducing waste, making it more popular among people who normally follow the fast fashion trend.

Being able to work with people who have experience with both of these brands gives us an advantage. Through them we learned about the possibility of Stoll to use pixel-based images in their machines and software, whereas Shima Seiki uses their own file extension. Because of this we have decided to focus on Stoll machines and software for the moment and expand to Shima Seiki machines in the second year of our sales.

By discussing and meeting with the entrepreneurs of these two companies, we have created a partnership and gained valuable information in the processes that they have established and challenges that they are facing. As they work with different knitting manufacturers it enables us to explore both perspectives and see the advantages and disadvantages. Through them we learned about the possibility of Stoll to use pixel-based images in their machines and software, whereas Shima Seiki uses their own file extension. Because of this we have decided to focus on Stoll machines and software for the moment and expand to Shima Seiki machines later. They will also benefit from this software, which we will allow our close partners to use for free.

Through associations such as Modint and ClickNL, which regularly organize meetings among members and often have a newsletter or magazine, small businesses will be addressed and reached. Through their large networks we will find our first customers.

CLICKNL is a network for creative industries, harbouring knowledge and innovation. It connects researchers to enterprising creative people, enabling them to work together on sustainable solutions to societal and economic challenges. This association is part of the Dutch Creative Industry top sector and they aim to bring people and resources together with the aim of making the Dutch creative industries an international leader. One other objective is to develop a national knowledge and innovation agenda for the creative industries, monitoring the progress and quality of its implementation, as well as initiate and maintain promising forms of cooperation and cross-overs. Finally, they wish to act as the national and international point of contact for all those players that want to innovate in and with the Dutch creative industries. We can access their network and gain exposure, and they are interested in having expert participation in their projects. Thus, we are able to offer them creative input in their projects.

Modint is a network of manufacturers, importers, agents and wholesalers in clothing, fashion accessories, carpets and (interior) textiles, connecting about 600 companies. They realize annual combined sales of € 9 billion in the Netherlands, of which, more than 50% is exported. Their aim is to build a valuable and healthy future for our industry, and they do this by supporting their members with specific questions or situations. With the help of visual, innovative, advocacy and services they ease business processes for their members. For example, they offer corporate services and activities based on needs and current issues, individual services and projects, highly qualified personnel and systems, workshops, training courses and expert meetings, transparent and flexible financing to low-threshold entry, a growing network, delivery & payment terms, grants and insurance in the social field. For a membership fee we will be able to access their knowledge base and network

5. Business Roadmap

The roadmap is meant to give a clear overview of the next phases and steps that will be taken. Thus, we will outline a time-based plan, which includes objectives that we will strive to achieve. At the same time, the steps that will be described show the incremental build of the most important processes of our business plan: markets, distribution channels, product development, organization and resources.

SWOT Analysis

In order to carve a sustainable niche in our market, we have conducted a SWOT analysis, which provides insights into the issues which will require the most attention in the future. Our weaknesses mainly consist of the fact that we have no entrepreneurial experience and no in-depth knowledge of knitwear design or back-end programming. We make up for this, through our strengths, which include confirmation from experts from Stoll and Tilburg Textile Lab that our software is needed and useful to them, the software will be wrapped as a web application (thus being more accessible), understanding of different expertise areas (through our relationship with our external partners and internal resources), knowledge of 3D knitting technology, and connections with entrepreneurs, business experts, software engineers and fashion design experts from which we can gain knowledge that we might currently lack. In terms of opportunities, 3D knitting technology has evolved and enables quick production of custom products without creating waste, there is an increasing trend of people being willing to pay more for fair production (see chapter 2) and new features and patterns can be added on demand to fit the needs of the clients. Finally, the threats that we are dealing with include fixed production processes in the production facilities, difficulty in changing the mindset of the fashion industry, and the current rather low demand for made-to-measure knitwear (see chapter 2).

By analysing the identified strengths, weaknesses, opportunities and threats we can see that we dispose of the resources to successfully launch our product, as our biggest opportunity lies in the fact that the technology is advanced enough to support a more environmentally friendly approach to fashion. Even though it might be challenging to initially penetrate the market, by collaborating with custom knitwear entrepreneurs we will diversify the offering and increase the interest for knitwear on demand. It is very important to note that we have already received confirmation that our software is needed and will simplify processes for textile experts. We are ultimately developing a web application, this makes it easy to access and use by a wide range of customers. Family and friends will help with the initial development of the business.

Risk analysis

For the risk analysis, we applied Leo Polovets and Susa Ventures method about De-Risking a startup. Their method provides help to reveal the risks in different aspects.

Product/Market Fit (B2B)

In our B2B market we are already in connection with fashion designers, who would use our software tool to design clothes, but we did not run any pilot with them yet. Since we will offer the base software for free, we can target these small fashion designer companies to use our tool without making any risk on their side. This was we can take the first step and run our first (unpaid) pilot.

Product/Market Fit (B2C)
There's already a market for on-demand clothing, however it's mainly based on hand-made clothing and it is rather expensive for the wide public. An online campaign of offering custom-made clothing for a more would attract a wider range of people and this way our user base will grow organically.

Product/Market Fit
Engagement towards fashion brands are moderate. Many people have their preferred fashion brands and stores, but they are willing to consider other offers. It is good in one hand, that we can attract people who are engaged with other brands, while we have to pay high attention to their satisfaction. By building up strong customer satisfaction with personal service and excellent quality, we can become "The favorite brand" of a significant portion of our market segment and we will be able maximize their engagement and they would be less likely to churn.

Product Quality
We have a functioning prototype of the software which is able to create appropriate design output to feed 3D-knitting machines, but clearly does not satisfy all customer needs. By constant development of the software, we can improve the functionalities of the software by keeping close connections with the end users and their needs. Also, the software will be open-source and allow using custom plugins, so we will try to form a developer community to organically expand the possibilities of our software.

Team & Recruiting
The team is not formed yet. However, in fist one-two years, many tasks will be outsourced (such as marketing and fashion design). As the venture is growing, there's enough time to find the appropriate applicants with targeted advertisements and networking at relevant events.

Factor	**Risk now**	**After Control**
Product/Market Fit (B2B)	High	Medium
Product/Market Fit (B2C)	Medium	Low
Product/Market Fit (Churn)	Medium	Very Low
Product Quality	Low	Very Low
Team & Recruiting	High	Low
Sales	Very High	Low
Market	Low	Very Low
Funding	Medium	Low
Short-Term Competition	High	High
Long-Term Competition	Medium	Very Low

Sales
The most important risk based on our analysis is the lack of experience in sales. We are willing to do the research about what are the most successful techniques nowadays of online and offline sales. We will be in constant connection with business experts to ask for help in sales and other aspects of the venture. Also, we build a lot on returning customers and the world of mouth, so the main pillar of our sales strategy is the excellent customer satisfaction.

Market
We did a plausible top-down analysis of market size, but we do not have yet a bottom-up approach based research, so we know the size of our target market, but we are not sure how many people are willing to buy our product. No research made in this field, since there is no market yet for

custom-clothing in the lower premium segment. We need to conduct an extensive research using bottom-up approach and quantitative analysis to estimate our market size.

Funding
The initial investment is coming from Jacqueline's savings, family and friends and a bank loan. However, we do not have further investors yet. The initial investment is enough to prove that the concept is working, we are able to run several pilot projects. So, if our attempts will be successful, we will be able to attract investors and convince them with our initial success.

Short-Term Competition
There are countless competitions in the fashion industry targeting different customer segments. However, we have our unique welling points and using modern technologies to produce and sell clothes which satisfies the customer needs better than our competitors. Our way to mitigate the risk of competition is cutting cost on waste, labour, transportation and provide high quality products and excellent customer satisfaction. However, the number of competitors will not decrease significantly in the close future, so this risk remains high.

Long-Term Competition
In long-term, after we created the demand for custom-clothing in a significant range of society, we have to compete with brands offering other kinds of custom-clothing. As you can see in our competition analysis, our direct competitors are small in size and there are a lot of possibilities to grow, but still we are not alone. By constant development of our software and improving the satisfaction of our customers, we have the chance to become the market leaders in custom clothing.

Business plan phases

Now we present a table consisting of four dimensions divided between 3 periods of time (the „roads"), all of which are inseparably linked to each other. This table is shown below:

	2017	2018-2019	2020-2021
Market	• Do a crowdfunding campaign to get the first sales going	• Start sales in The Netherlands • Expand focus to the European market	• Grow within the European market
Distribution Channels	• Create a web-app • Explore good places for pop-up stores in The Netherlands.	• Follow design or fashion related events in Europe with pop-up stores.	• Open a permanent store with seamless knitting machine(s).
Product and Service	• Develop the software to enable design of fully-fashioned garments. • Create a few designs for customers to choose from. • Test if the fit is correct for different designs and sizes by producing samples. • Set up an online community	• Develop the software to enable design of seamless (3D) garments. • Do pilot tests with loyal customers to test the fit of new designs for different sizes.	• Develop the software to enable exporting to a variety of file types used in a variety of knitting machines. • Test the new exported files on existing knitting machines • Develop the software as a platform for other custom fashion brands

Organizational Structure	• Find a production facility to produce knitwear. • Ask family and friends for programming help when needed. • Find a fashion designer who will share their pattern-making expertise.	• Hire a programmer to further develop the software • Hire a part-time fashion designer to help create new designs.	• Purchase a seamless (3D) knitting machine and software, and hire an expert to enable us to do production ourselves. • Partner with diverse production facilities to test different file types.
Resources	• Invest my own savings. • Ask a loan from family and friends and a loan from the bank. • Invest time in software development.	• Pay back all loans.	

To summarize, our first main objective is to be able to offer both fully fashioned (2D) and seamless (3D) knitted products using Stoll knitting machines. The second goal is to create a sustainable business around selling custom clothing to consumers and small series to businesses. For now we will aim to sell around 10 custom items and 2 batch orders every day, which would give us enough profit to pay all expenses and further invest in the software. We plan to achieve this within three years of initial sales, starting with only a few sales per week. For more information about sales see chapter 6.

PHASE 1: starting up
In this phase it is important to properly set up our processes and have the software implemented and running.

In the first phase of the **market**, we will set up a crowdfunding campaign to stimulate the sales of our garments and gain brand awareness from potential customers. The aim of this is to have 140 unique orders and 16 orders by the end of 2017. This is possible because of the trends observed in Chapter 2: growing population, growing interest in high-quality and environmentally-friendly clothing as well as development of the technology.

The **distribution channels** will be two-fold: both online and in-store. The software will be web-based and target 2 types of users: basic (consumers) and expert (designers) users. The basic user will be able to choose design, type body measurements choose pattern, choose preferences (ease, arm length, neck shape and size, bottom length), pay and send production request. The expert user will be able to create new pattern (optional, requires production of a swatch), choose design, choose standard body measurements, choose pattern, adjust measurements, choose batch size, pay and send production request, or download the design. We will also open pop-up stores in at least 3 fashion events in the Netherlands, where customers can get their measurements and choose their designs. To raise awareness about our pop-up stores, we will advertise online.

For the **product and service** we have to develop a software program to enable fully fashioned (2D) knitwear production of unique garments and smaller series on existing machines. The focus is on making exported file types compatible with Stoll M1 software for knitwear design and production, and to make the software usable for consumers and designers. The next step is to contact designers and consumers to test the usability of the software. Approach producers who have these Stoll knitting machines to test production using files created by the software. After we have confirmed the functionality and effectiveness of our software, we will create some designs for the

customer and check if the made-to-measure garment fits the specifications of the client. This will implementation and testing step will take place in the first year.

In terms of **organizational structure**, in this phase, after the software is complete, we aim to find a production facility where we can produce the knitwear, until we can afford to buy our own machine. Customers will receive their designs and produce it on their own, meaning that we will handle large amounts of orders. Family and friends will help with some programming matters and we will look for a fashion-designer to share their expertise with us on pattern-making. The main tasks will be handled by Jacqueline, until the programmer and fashion designer are hired in Phase 2.

The **resources** used this phase will come from personal saving, a loan from family and friends and one from the bank. In the first year most costs are related to software development and testing new designs. We will optimize our service through learning from experience, more specifically, as customers receive their designs we can adjust the software based on their feedback.

PHASE 2 (2018-2019): growing sales
In this phase we will start sales in The Netherlands, and slowly focus on the European **market** as well.

We now sell seamless knitwear, which is more comfortable and looks better. This is a more luxury product for consumers who are looking for this or for more high-end fashion brands. Also more different designs are available to choose from. The producers we work with will start seeing the advantage of our program, as more custom orders using our software enables them to switch between series more quickly and it fills up knitting machine capacity in-between larger volumes. We expect the number of products sold to triple in each year of this phase: 1000 consumer sales and 110 batch sales for 2018 and 3400 consumer sales and 400 batch sales for 2019. As research from Deloitte shows that 36% of customers are interested in personalized clothing and 19% have acquired such a piece, we expect to sell products to at least 8% of these people.

For **distribution channels**, we will follow design or fashion related events in The Netherlands first and from 2019 onward throughout Europe with pop-up stores. These events could include Dutch Design Week, Amsterdam Fashion Week, Milan Design week, etc. In this phase we expect to increase our sales and acquire more customers, both in terms of consumers and of small brands. We will also have a larger offering of designs and patterns available for customers created by both us and our user base.

In this phase of the plan for the **product and services** we will focus on developing the software to enable design of seamless (3D) garments. By doing this we will create seamless designs for customers to choose from. As it is important to test our new products, tests will be run pilot tests with loyal customers to test the fit of new designs for different sizes. We will continue focusing on building expertise on the interference between software and the knitting machines by exploring production on machines from different brands. We want to develop our software so it can be used for production on any flat-bed seamless or fully fashioned knitting machine.

For the **organizational structure** part, in this phase we will hire a programmer to further develop the software and a part-time fashion designer to help create new designs. The programmer will be responsible for preparing designs for the knitting machines and implementing add-ons and patterns requested by clients. The part-time fashion designer's main tasks will include creating more complex designs (their key roles are explained in Chapter 4). Another step will be growing

customer intimacy through our online community. We will focus on building lasting relationship with buyers by offering them a forum where people and fashion designers can discuss their needs for improvements and they can also upload their extensions (which can include new designs, different views, or additional garment editing points) for everyone to use. We will introduce a return policy for products created with the basic version of our software, but as the extensions cannot guarantee correct fit, it will not apply to them.

Finally, in terms of **resources**, based on the sales that we made, this is the phase in which we will start paying back all loans to family and friends. Specifically, the bank loan will be paid back in early 2019, while all the other loans will be returned by the end of 2019.

PHASE 3 (2020-2021): future developments
In the third phase our main goal for the **market** is to grow in Europe. We will do this by following European fashion events and opening pop-up stores on their location. This will again triple our sales in 2020 with almost 14000 consumer sales and 1060 batch sales, and in 2021 with 50000 consumer sales and 4000 batch sales.In terms of **distribution channels**, we will open a permanent stare in the Netherlands with our own seamless knitting machines.

For the **product and services** part, we will enable the software to be used in combination with any flat-bed knitting machine available to the customer, both hand-held and computerized. It can be used with any current or new production process of fashion brands, but is especially suitable for production of unique knitwear items. Moreover, the new types of export files will be tested on existing knitting machines. We also plan to develop the software into a platform for custom fashion brands, as we are the only available software for custom knitwear design. Furthermore, we would like to enable them to set up their own interface and possibilities within our software environment, so they can sell their garments through our platform.

In terms of **organizational structure**, we will purchase a second hand seamless (3D) knitting machine and software, and hire an expert to enable us to do production ourselves. This will enable us to become small production facility and have our customers knit their garments on-site. In order to test the different file types that we can now offer, we will reach out and partner with diverse production facilities so that we can test them

6. Financials

Sales and Pricing

SALES FORECAST	2018				*2018*	*2019*	*2020*
	jan-mar	*apr-jun*	*jul-sep*	*okt-dec*			
Consumers							
2D pullover	80	108	146	146	480	1.306	5.338
2D top	60	81	109	109	360	979	4.003
3D pullover	-	-	-	120	120	1.075	4.393
Total Consumer Sales	140	189	255	375	959	3.359	13.734
Batch Orders							
2D pullover	9	12	16	16	54	147	393
2D top	7	9	13	13	42	114	305
3D pullover	-	-	-	15	15	134	359
Total Batch Sales	16	22	29	44	111	395	1.057
Software							
downloads	40	54	73	98	265	709	1.548
membership	12	16	22	30	80	213	464

With our first crowdfunding campaign starting at the end of 2017 we aim to achieve 140 unique orders and 16 batch orders with an average of 12 garments in the first three months of 2018. After this our sales will slowly increase and in the entirety of 2018 we will sell almost 1000 unique garments and around 110 batches. The first month the software will also result in 40 downloads, which could be companies but also manual machine knitters at home, and 12 people will have a membership. If we are able to finish the software before 2018 so that it is able to correctly produce products that will exactly fit customers in a range of sizes, we are able to bind customers from the beginning and steadily increase sales.

PRODUCT PRICING	cost price	sales price	sales price incl. VAT
Consumers			
2D pullover	81	109	131
2D top	55	74	90
3D pullover	92	124	149
Batch Orders			
2D pullover	65	82	-
2D top	40	50	-
3D pullover	76	95	-
Software			
downloads	-	5	5,30
membership	-	12	12,72

Consumers pay around €90 to €150 for a custom sweater including VAT, and companies can purchase batches for around €50 to €100 excluding VAT. The exact pricing will be calculated according to the design, as each yarn type, size, and pattern will result in a different price, so the customer always pays for the value of the garment. Batch orders mainly benefit from reduction in price because less programming work is involved in the factory. Also, we ask consumers for a margin of 35% per product, whereas this is 25% for batch orders greater than 10 products, as these result in a higher total income per customer.

Income and Cash Flows

INCOME STATEMENT	*2017*	*2018*	*2019*	*2020*
Net Sales				
consumers	-	93.603	347.182	1.419.392
business	-	95.131	366.060	978.606
software	-	9.923	26.527	57.885
Cost of Goods Sold				
consumers	-	69.335	257.172	1.051.402
business	-	76.105	292.848	782.885
Gross Profit	**-**	**53.216**	**189.749**	**621.597**
Selling Expenses				
advertising expense	-	2.500	4.900	7.500
(pop-up) store expense	-	8.000	8.000	32.000
returns/failed production	-	1.887	7.132	23.980
Administrative Expenses				
managing director	7.000	20.000	28.000	35.000
General Expenses				
workspace	-	1.500	6.000	6.000
knitting supplies	600	1.600	2.000	4.000
Research & Development				
software development	1.250	3.750	21.000	28.000
fashion design	500	2.200	11.000	20.000
testing	3.000	8.000	8.000	8.000
other employees	-	-	2.000	25.000
Operating Expenses	**12.350**	**49.437**	**98.032**	**189.480**
Operating Income	**(12.350)**	**3.779**	**91.717**	**432.117**
Other Income/Expenses				
knitting equipment	(400)	(150)	(1.300)	(140.000)
depreciation	(26)	(62)	(184)	(9.303)
loan from family and friends	8.000	-	(8.000)	-
own cash investment	7.000	-	(7.000)	-
bank loan	-	6.000	(6.000)	-
interest	(160)	(2.320)	(740)	-
income tax	-	(1.642)	(18.343)	(86.423)
Total Non-Operating	**14.414**	**1.826**	**(41.568)**	**(235.726)**
Net Income	**2.064**	**5.605**	**50.149**	**196.391**

Our main expenses are the managing director's wage, investments and wages for software development and fashion design, and organizing pop-up stores. The first year this results in a loss of €12.000, which we will cover using the owner's cash investment of €7000 and a loan from family and friends of €8000. To get sales started and get through the first year we will need another loan

of around €6000, for which we will approach a bank. We will break-even in July of 2018, after which we will be making profits. In 2019 we will be able to pay back all loans. In 2020 we will make a large investment in two seamless knitting machines and a permanent store.

CASH FLOW STATEMENT	*2017*	*2018*	*2019*	*2020*
cash collected from customers	-	198.657	739.769	2.455.883
cash paid to supplier	-	(145.440)	(550.020)	(1.834.286)
cash paid for expenses	(12.350)	(49.437)	(98.032)	(189.480)
Total Operating Activities	**(12.350)**	**3.779**	**91.717**	**432.117**
knitting equipment	(400)	(150)	(1.300)	(140.000)
Total Investing Activities	**(400)**	**(150)**	**(1.300)**	**(140.000)**
loan from family and friends	8.000	-	(8.000)	-
own cash investment	7.000	-	(7.000)	-
bank loan	-	6.000	(6.000)	-
interest	(160)	(2.320)	(740)	-
income tax	-	(1.642)	(18.343)	(86.423)
Total Financing Activities	**14.840**	**2.038**	**(40.083)**	**(86.423)**
Net Increase in Cash	**2.090**	**5.667**	**50.333**	**205.694**
Cash	**2.090**	**7.757**	**58.090**	**263.784**

Balance Sheet

From 2020 onward we will have no long-term liabilities in the form of loans. The value of our software including designs has increased due to the work we have put in and we have purchased two knitting machines, resulting in an owner's equity of almost €500.000 by the end of 2020.

BALANCE SHEET	*dec-17*	*dec-18*	*dec-19*	*dec-20*
Current Assets				
cash	2.090	7.757	58.090	263.784
supplies	300	400	500	1.000
Property, Plant and Equipment				
knitting equipment	387	478	1.632	136.836
depreciation	(13)	(16)	(54)	(4.561)
Intangible Assets				
software	1.250	5.000	26.000	54.000
fashion designs	500	2.700	13.700	33.700
Total Assets	**4.514**	**16.319**	**99.868**	**484.759**
Long-Term Liabilities				
loan from family and friends	8.000	8.000	-	-

own cash investment	7.000	7.000	-	-
other loan/investment	-	6.000	-	-
Total Liabilities	**15.000**	**21.000**	**-**	**-**
Owner's Equity	**(10.486)**	**(4.681)**	**99.868**	**484.759**

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Appendix A: Trend Analysis

We live in a time where fast-fashion is the norm. People want to wear trendy clothes for low prices, which has become especially important in times of financial crisis. Due to the crisis there has been a 16% decline in turnover for fashion stores since 2007, which has led to bankruptcy for many Dutch retailers. This offers large international retailers the opportunity to expand and offer even lower prices and faster collection switches to their customers. This has allowed these companies to make relatively high turnover even though the Dutch market is shrinking. The consequences of these developments are a highly competitive apparel industry in which managing costs and speed are the leading values.

Demographic
According to the United Nation's medium-variant projection the world population will grow from 7.3 billion in 2015 to 8.5 billion in 2030. All these people will have a need for water, food, clothing, and shoes. There is a trend towards urbanization and a growing middle class, which will be able to afford more and different products in the future. Western countries are the largest apparel consumers, however China is becoming more and more important and will also experience a large amount of population growth and increase in welfare. In Europe the overall population will shrink according to the UN and the elderly population will increase. The CBS predicts that the Dutch population will grow taking into account immigration and longer life expectancy. This results in a larger population with a different composition: more elderly and more people with a non-Dutch background.

Economic
Even though there is a growth in Dutch population and welfare predictions are positive, the crisis has made people hesitant to spend their money on fashion. This can also be due to the increasing number of elderly, which spend less on clothing in general. It is unclear whether people will start spending more at this point in time. To be able to keep costs low an efficient supply chain is essential. As a result of the increasing costs of raw materials it has become more important to reduce labour costs to be able to offer fashion at low prices. Production is outsourced to low income countries and stores are often large and focused on sales volume. Nevertheless, the import costs of apparel have increased steadily since 2008.

Another important success factor next to low costs are the speed with which companies can bring to market new trend collections. Pioneer in this area is Inditext (Zara), which is able to bring to market a new product within 15 days. It examines which products are sold best in the stores and chooses accordingly from hundreds of designs that are being produced continuously. A large part of their collection is changed every two weeks, however production costs are higher. This strategy enables Inditex to pull customers to their stores and avoid sales to make a profit. Enabling customers to buy many low-quality fashion items for low prices results in a habit of easily discarding clothing. A large amount of the clothing sold will end up as waste.

To achieve a market share in this competitive environment companies are addressing a broad audience and are expanding their franchise. Independent business owners have trouble keeping up, often because they have to anticipate their purchases on less data and longer in advance. Also, more and more is sold online, which requires knowledge and investments that small retailers often do not have. Between 2011 and 2015 the number of physical fashion stores has decreased around 10%. Another development is the increasing appearance of pop-up stores.

Social
Most people go for fast-fashion, however also the premium segment is still able to make a profit. This is partly thanks to China where the demand for luxury items has increased. It has become essential to show a clear positioning in the current market, as the middle segment has trouble making profit and binding customers.

Having to produce fast, at low costs, and according to high standards, puts pressure on the production chain. In combination with large numbers of suppliers and subcontractors this can lead to situations where ethical boundaries are crossed. Companies are not able to thoroughly check their entire supply chain, and it becomes almost impossible to keep costs low and provide safe conditions for all people involved. Disasters such as in Bangladesh in 2013, where more than a thousand people died when a garment factory collapsed, have increased pressure to provide safe conditions, however many do not comply.

Consumers can persuade the apparel industry to become more ethically responsible by making sensible decisions when purchasing new clothing. Unfortunately most consumers don't know which brands are sustainable and which are not, partially because also companies themselves have difficulty guaranteeing their sustainability. Dutch people are willing to pay more for clothing if they are assured factory employees are able to work in a safe environment. This has been investigated by NCDO in collaboration with TNS NIPO among 1.016 people in The Netherlands. Specifically, if people have this guarantee, on average they are willing to pay €4,50 (9%) more for €50 jeans.

Ecological
Besides ethical aspects also ecological impact is a concern. According to the Carbon Trust, which investigates the carbon footprint of organizations, products, and services, 9% of carbon produced globally comes from the textile industry. Around 3% of global CO2 emissions is produced specifically by the creation and use of clothing. A typical t-shirt is responsible for around 15kg of CO2 in the product's life cycle, of which 14% is produced in producing and gathering resources, 21% is used in the production of the textile and garment, and 52% is emitted during the use phase (washing, drying, ironing). Creating longer life cycles for clothing will result in a lower carbon footprint because less clothing has to be produced. By focussing on a made-to-measure process fewer unnecessary products will be made and the product is less easily discarded, leading to a reduction of waste.
Next to CO2 emissions the apparel industry also has a great impact on water consumption and pollution of the environment. Among other things water is being used to produce yarn and fabrics and to manipulate these materials for instance by dying. The production of one t-shirt requires more than 2000 litres of water. Another problem is that pesticides and other chemicals are being used in the production process, which will get into the water and cause pollution. Solutions such as biological cotton and new dying processes help reduce the amount of water and chemicals being used.

Recycling is an important factor in the creation of a lower footprint for garments, as part of the production process and resources could be replaced. The sector is already working on initiatives to collect clothing, such as H&M which gives a discount on new clothing purchases when consumers hand in their old clothing. Next to this efforts can be made to mechanically recycle clothing waste, such as the Netherlands-based companies Brightloops and Frankenhuis are doing.

Technology
Overall the apparel industry is characterized by a low-tech process which uses a lot of labour. As

long as labour can be done cheaply the sector will continue to be labour intensive. This will be the case for the main part of the industry in which clothes will be assembled, including 2D knitted products which are often still knit on manual machines. Going for more automated solutions and implementing robots requires high investments and regular maintenance, and it can make the production process less flexible considering constantly changing designs. Also in their material choices they often go for traditional options that have been around for decades, which includes mostly natural fibres.

Technological advancements are being explored and brought to market to improve the fashion industry. In the sourcing stage nano-technology can play a role in improving the properties of natural fibres. This opens up the possibility to add particles to the natural fibres which could give the finished fabric for instance self-cleaning or antiperspirant properties. In the design phase the consumer, designer and production can be brought closer together through the implementation of for example customisation services and 3D body scanning. These can be used to create a more personal product that better fits the user. In production automation plays an important role. Cutting machines or 3D knitting machines for instance make the production process less labour-intensive, but also 3D printing technology opens up new possibilities. It is also possible to create smart textiles to include in textile products, which can be used as sensors for instance to measure heart rate or posture, or as actuators for instance to keep us warm or to respond according to the environment. The most important success factor of these new technologies is the response of consumers.

The largest development can be seen in online sales. According to the research from the Rabobank 16% of all expenditure on apparel was through online channels in 2015, and this number is expected to increase. This is largely due to the increasing quality of web shops with better product information, reliable payment methods, quick delivery, and easy return policies. Next to this it is possible to gather data about consumer behaviour and anticipate the needs of their customers, giving web shops a strategic advantage. An upcoming technology in web-based sales is virtual fitting rooms, which show the customer how the clothing will fit on their body according to 3D measurements. This way web shops will be able to reduce return rates, which are currently relatively high.

Government

A combination of the economic crisis and the growth in e-commerce has resulted in a decline in physical stores. Many store spaces are vacant and shopping facilities on the outskirts of the city have trouble making a profit. This is of concern to the local government, as they are responsible for the state of the city and avoid building deprivation. Communication with stakeholders becomes more important to solve these issues.

In the past the textile industry was important for the Dutch economy. With the rise of cheap labour countries and increase in trade worldwide this has greatly decreased. If the sector will move toward a more high-grade industry and technologies are advanced further it is possible that the apparel industry will play a bigger role in the future.

Future Scenarios

In ING's vision for the apparel industry in 2025 they propose two future scenarios according to research and trend analysis. These are contrasting scenarios, so they expect the future will hold some kind of combination of the two.

PRICE Scenario

In the future a growing world population has to be provided with clothing as efficiently as possible. Volume and low costs are the most important considerations in this scenario. Actually, this scenario fits best with the current state of affairs, however it is a more extreme version. Competition becomes more intense and only strong brands will survive in the premium sector or those with a clear added value in a niche market, whereas fast fashion becomes the new middle sector. Rising economies will be the new main market. Asia will continue to be an important producer of apparel, but also in Africa low-wage production will develop. Thanks to better logistics it becomes better possible to combine fast and low-cost strategies.

With the growing demand for textile also the ecological footprint will grow, even though new developments are able to reduce the footprint per product. Also, because organizations move their production to low-income countries the production chain will continue to be non-transparent and ethical boundaries are crossed. As long as plenty of cheap labour is available, organizations will be hesitant with investing in automation and therefore the role of technology in the apparel industry will be limited. Consumers take a passive role in the design process and there is a limited demand for smart technology in clothing or shoes. The amount and diversity of 'green' labels makes it confusing for consumers to make considerate choices.

Thanks to the strong competition and the rise of e-commerce most smaller stores have disappeared and new stores are all about scale. These developments have an impact on building vacancy. Some previous stores will be replaced by food, entertainment or residency, however building deprivation cannot be avoided in all places.

SMART Scenario
ING's smart scenario is based on technological developments leading to new business models and a further shrinking economy. ING's report was written three years ago, when the economy was still shrinking, however at the moment the economy seems to be making small growth which is expected to continue next year. Therefore I have made a few adjustments based on my own trend analysis.

The European consumer has shifted towards making more sustainable choices in general, such as eating biological food and installing solar panels. With strong economic growth in Asia, Europe will compete by making sustainable investments. This has an effect on tax systems which will stimulate sustainable behaviour in organizations. Sustainability will no longer be a choice but will become a requirement. People have become more aware of the ecological and social impact of the apparel industry, and will more often choose for high-quality, timeless and sustainable alternatives. They will purchase fewer clothing but are willing to pay more for sustainability and quality. This will force the fashion industry to change their traditional business model and allow for technology to play a more important role. The main disadvantage of these developments is that low-income countries will not have the opportunity to improve their economy through the apparel industry.

The increasing use of smart systems further increases the growth in the online market. The resulting reduction of physical stores will lead to new collaborations among stakeholders which integrate the offline and online world. On premium locations large stores will dominate, but also less optimal locations are being used for smaller stores with limited storage and a strong link to their online channel. Online organizations also use the empty spaces to open pop-up stores. Next to this there will also be more attention for second-hand clothing.

Technology plays an important role in the transition process. Next to implementing technology in materials also production processes will use technology for automation. Asia will mainly produce for their own growing market and Europe will pull produce more locally. Machines are able to replace labour and create products more efficiently, which reduces the ecological footprint and creates a more ethical production chain. Added functionalities such as self-cleaning properties and the use of water-free dying technology further reduce waste and pollution. Technological advancements will create a production chain which is closer to the customer. Body scans and virtual fitting rooms are used to allow customers to make more appropriate choices and the product will be produced after an order is placed. Also accessories can be made on demand using a 3D printer. Using this strategy over-production and sales are avoided, and because customers receive a perfectly fitting product the amount of returns decreases.