

TEAM B
Fas.P.OnSite

After the last Skype review, Team B has decided to rethink some aspects of its project. In particular, the “avatar” generation has been deeply modified.

In this document it is possible to find and read the new proposal. In addition, there is the new report index, which has been expanded and detailed more than the previous and includes some drafts of the chapters.

A NEW IDEA

A new idea

FasP. OnSite stores will be equipped with special changing rooms, where the user will be able to create his/her own avatar, in order to use it during the design phase: this avatar consists on a real video of few seconds of the user, to be used during the design phase as visual feedback (the user will dress his/her avatar with the personalized knitwear), eventually sharing it through social networks with friends to have their feedback before buying it.

The user-generated knitwear is created with FasPOnSite interface (available in the stores and on internet), starting from basic models, with consistent but limited degrees of personalization; for the visual feedback the personalized model will be rendered as video, and it will be overlapped to the user's avatar video in order to give the illusion that the avatar is wearing the knitwear.

To obtain a satisfying result we need to keep track of the user's body motion during the recording of the avatar's video; in addition we have to store information of the user's body measures both for tuning the 3D model parameters during the visual feedback and as input for the machines during the production phase.

All these information must be saved during the user's registration to the service, in the FasPOnSite stores: it will be the changing room that will allow to record:

- Video of the user (avatar)
- User's body motion tracking
- User's body measures

The fundamental element needed is a high-resolution camera like RED cameras¹ to record the user's video in HD format: this will allow easier post-processing of the video like masking of the undesired areas of the video, in order to obtain a convincing final avatar.

The motion tracking can be recorded using inertial motion capture systems like XSens MVN² or MVN Biomech³, but it can be an invasive solution because the user has to wear the instrument, even if they offer very precise measures; another solution can be retrieve lower-quality measures through video analysis and image-processing: the user will attach to specific locations of his/her body some stickers of different colors, so that they will be easily found and tracked with image-processing: having 2 cameras positioned perpendicularly will permit to track from 2 points of view the stickers, being able to have precise information also about rotation: this can be a reasonable solution with a little of collaboration of the user during the recording of the video. This is the solution we have adopted for our project

¹ <http://www.red.com/cameras/>

² <http://www.xsens.com/en/mvn>

³ <http://www.xsens.com/en/mvn-biomech>

About the body measures, the most important ones taken by tailors for knitwear production⁴ are:

1. Collar (circumference of the collar allowing a centimeter of tolerance)
2. Chest (circumference of the chest allowing the measuring tape to pass under the armpits)
3. Waist (circumference)
4. Cuff (circumference of the cuff adding three centimeters of tolerance)
5. Arm (circumference of the arm allowing one centimeter of tolerance)
6. Shoulders (distance from one end to the other of the shoulders)
7. Sleeves (distance from one extreme of the shoulder to the cuff keeping arm slightly bended)
8. Length (Measure the distance from the base of the neck until covering the gluteus)

Some of them can be retrieved with image/video processing (all the distances), the others can be measured by a specialized tailor available in the stores for an extra fee, or easily measured by the user and given through the interface also by home (a solution already used by online tailors).

Thanks to these measures the 3D model can be regulated according to the user body and tuned directly by the user through the interface (change of color, modification of features like the collar type); a visual feedback will be generated converting the 3D model into a video: the lightning (same as the changing room), animation (thanks to the motion capture measures) and texture (specific of the model) will be a priori known by the system and the 3D-to-video conversion process will be done client side in order to avoid overloading of the system (e.g. using plug-ins like Flash or Silverlight).

The speed of this process will depend also on the length of the video, so a good balance can be 10-15 seconds of video for the avatar.

The Computer-Generated (CG) video of the clothing will be overlapped to the avatar video layer, and the application of masks to both layers will permit to remove/substitute the background and preserve the areas of interest like the user face, hands and lower body part, as well as the part of the CG clothing. The two videos will be synched in order to have a final, coherent, video stream.

We will describe the user experience using our service:

Enrollment phase

- Sign-in: done in the store, giving general information like name, address and so on.
- Creation of the avatar: done in the store's "changing room"; the user will apply colored stickers to his/her body (to measure the distances), and a video of him/her will be recorded; the user has to feel like a model during the recording of the video, so no strange movements or acts are allowed in order to have a better

⁴ <http://www.belisariocamicie.it/en/camicie/build>

final result; 10-15 seconds of this video will be chosen by the user, and saved as the user's avatar.

- User's body measures definition: a specialized tailor available in the store will take measures for an extra fee, or the user himself will be able to take them thanks to tutorials and instructions available in the store and online.

Design phase

- Knitwear creation: done in the store or on Internet through the FasPOnSite interface.
- Personalization: the user will choose one of the available models where to start from, and will customize its features according to his/her personal taste.
- Visual feedback: at each point of the creation process, a visual feedback can be requested; it consist on a video of the avatar wearing the knitwear that the user is creating
- Sharing: the visual feedback can be shared as still image or video with friends and through social networks
- Buying: if satisfied with his/her creation, the user will fire the production phase ordering and paying the knitwear

Production phase

The contribution of the user during this phase is minimum; he/she has only to wait for the delivery of the personalized indumenta (approximately in 1 week)

Changing room costs

According to the project choices made (1 camera for avatar recording), the cost of the changing room consist on the cost of the camera:

RED One (body only) + Base production pack = \$ 18.750⁵

The other functionalities like motion tracking, image processing, 3D-to-video conversion and interface development will be done once, and the cost will be determined by the developer's cost per working hour: the amount of work can be quantified to a value of € 10.000/15.000 and 3-4 months of work. The cost for the maintaining of the service must be negotiated.

⁵ <http://www.red.com/store>

Index

PART I: *Introduction*

1.1 Starting Idea

(draft)

Fasp on site was born with the goal of providing the market with a specific custom-made service that offers design, production and sale of knitwear in a real-time context.

One important aspect was to help the customer become a co-designer and co-producer and for that, the service had to be backed up by groundbreaking technologies.

1.1.1 Fasp On Site is born

1.1.2 aim of the company and the approach to its target

1.1.3 the uniqueness of this type of business

1.1.4 importance of groundbreaking technologies and services in such an innovative project.

1.1.5 The general framework of the project, its organization and the important areas/issues to be tackled

1.2 Stakeholders

1.2.1 Classification of the stakeholders and the actors involved.

1.2.2 Their roles/objectives/capabilities/expectations

1.2.3 Benefits/risks of the project

1.3 Research & Activities carried out

1.3.1 Keywords and overview of the project

1.3.2 Case studies

1.3.3 Market study and benchmarking

1.3.4 On site visits/interviews/meetings with expert in the field/companies involved

1.3.5 Research of innovative technologies

1.3.6 Results/conclusions of the phases above and redefinition of the project accordingly.

1.4 Project's Milestones

1.4.1 Revealed problems/New challenges to face

1.4.2 The strength points of the project

1.5 Final Idea

1.5.1 Re-adaptation and refinement of the project in respect to the presented challenges.

1.5.2 Proposed solutions and the promise for success.

PART II: *User Requirements and State of the Art*

2.1 Shifting Customers' Needs

2.1.2 A new type of customer (dal consumatore al consumatore)

2.1.3 The shopping experience

2.2 The fashion industry

(draft)

The fashion industry is a very complex business environment where roughly five different market segments can be identified: haute couture, luxury, affordable luxury, mainstream, and discount.

- Haute couture: literally “high sewing” (in French) it’s the most expensive and exclusive since it comprises the small number of companies worldwide which offer women custom-made clothing at very high prices. The customer target is thus made from very wealthy individuals.
- Luxury: the target of this market remains wealthy people but quality and price are a bit lower than the previous segment and clothes are not custom-made but ready to wear.
- Affordable luxury: aimed at providing lower-priced alternatives to individuals (so-called “aspirational products” available to whom can’t afford luxury or haute couture products).
- Mainstream: this segment tries to create products that match the needs of the majority in order to have the largest potential market. Exclusivity is sacrificed for popularity.
- Discount: it targets low-income customers, whose limited resources make them focus exclusively on price rather than design or quality.

These five macro-segments can be grouped in two categories based on where the point of delivery is set across the supply chain: couture houses activate the design and production process when the order arrives and are thus 100% custom-made product firms; the remaining four have already designed and produced the piece when the customer order arrives and can be classified as ready-to-wear product firms. One of the main characteristics that make the Fashion industry different and particularly appealing is its very high insulation from economic changes, such as, for example, any cyclical crisis. In particular, as easily expected, the less affected are the top two market segments, which face quite stable revenues throughout time (stability meaning less downswings of course but also upswings). The remaining ones, with perhaps the exception of the discount segment, usually suffer the lower financial security of its customers, making them battleground for giant companies with innovative business models, such as Zara, Hennes & Mauritz (H&M) or Gap.

In the following section, an in-depth look at the top two market segments will be given, in order to reach to a better understanding on how a possible business model innovation could reap most benefits.

HAUTE COUTURE

As previously mentioned this market segment consist in the production and sale of very expensive, high quality, custom-made garments for women⁶. In order to give an idea of who exactly can the targeted customers be it's useful to point out how a haute couture piece can range from 20.000€ to hundreds or even millions of euros⁷. The potential market is thus very small since it comprises only the highest net-wealth individuals worldwide. It should be noted however, that, together with the growth of emerging markets such as India, China or Brazil also this usually very stable market is currently expanding.

In France the status of exclusivity attributed to each piece is increased by the rules, set by the *Chambre syndicale de la haute couture* (Trade Union of Haute Couture), that companies have to follow to call themselves "couture houses". These firms have to (directly from Union's regulations):

- Design made-to-order for private clients, with one or more fittings.
- Have a workshop (*atelier*) in Paris that employs at least fifteen people full-time.
- Each season (i.e., twice a year), present a collection to the Paris press, comprising at least thirty-five runs/exits with outfits for both daytime wear and evening wear.

Some of the most prestigious names to belong to such "league" are Christian Dior, Jean Paul Gaultier, Chanel, Christian Lacroix, Armani and Valentino. In other countries the status of haute couture is not certified as in France but still some companies who offer custom-made knitwear operate under such a name.

An haute couture only firm, albeit the very high prices, has difficulty making high profits. For this reason all couture houses also own a ready-to-wear line (in French *prêt-à-porter*), which is by far more profitable and drives the firm's growth. Most haute couture pieces exhibited during fashion weeks for example are rarely sold and their creation is driven more by brand-related motives rather than (directly) economic-related ones.

(Need numbers – volumes, margins, growth etc. - trying to find them)

LUXURY

The most important firms in this segment are, for example, Dolce & Gabbana, Prada or Gucci. What makes them similar is the concept of exclusivity the products they sell share. The main idea, in blunt terms, is that very rich people want to buy something only their money can buy, something that can allow them to "stand-out" from the crowd and the firms in this segment provide exactly this: very expensive, high quality, ready to wear clothes.

The delicate part of operating in such a market is that there's a clear trade-off between exclusivity (which justifies higher prices) and market size: if, for instance, Dolce & Gabbana start being very successful

⁶ Haute couture for men does not exist.

⁷ http://www.forbes.com/2006/06/27/haute-couture-fashion_cx_ls_0628feat_ls.html

amongst medium class customers, it might suffer the loss of its very wealthy ones, willing to pay a premium price, only if the exclusivity requirement is met.

Clothes produced by these firms can be associated to a bigger market, which incorporates other very expensive and exclusive goods such as, for example, cars, watches, hi-tech equipment or jewels. These can all be defined as being "luxury goods" and all share the same property: the demand for them from an individual rises more than proportionally as his income rises (income elasticity >1). This is the opposite from what happens to the complementary category of necessity goods, for which demand rises less than proportionally to income (income elasticity <1).

The main plague affecting this segment is the nearly effortless copying activity than can be carried out by low-cost producers (usually located in the far-east) and can lead to an injection in the market of fake pieces, diluting the idea of exclusivity for rich buyers. (Need numbers – volumes, margins, growth etc. - trying to find them)

The reason why only these two market segments have been further explored is that our project aims at providing a brand new business model which tries to position itself between these two categories, by offering the luxury industry targeted customers custom-made clothes through an innovative and technological process.

To better make clear where our service will position itself and the volumes we should expect to reach a brief overview of the idea will be provided. For a more thorough description, however, see chapt. XXXX. (TO be completed)

2.2.1 The redefinition of the brand's role

2.3 New technologies for new customers and the diffusion of the Augmented Reality

2.3.1 The evolution of the dressing room

2.3.1.1 The

Magicmirror™(magicmirror.thebigspace.com)

2.3.1.2 OMNIA Virtual Mirror (vimage.it)

2.3.1.3 The parc (PaloAltoResearchCenter)

research in new fitting rooms (parc.com/search.html?q=dressing+room)

2.3.1.4 A step further: the Cisco idea

2.3.1.5 The funny mirror: Microsoft + Disney

2.3.2 A new kind of made-to-measure (bodyscan, customization...)

tailoring

2.3.2.1 The case of Brooks Brothers digital

2.3.2.2 The case of UniquePatterns

2.3.2.3 The case of ic3d

2.3.3 Try on in the virtual and augmented reality era

people

2.3.3.1 MyVirtualModel: virtual items for virtual

powered by Zugare

2.3.3.2 The augmented reality of Tobi.com

2.3.3.3 Tissot and other cases of “augmented”
try on (virtualmirror.net, silhouette.it)

2.4 Targeted Market Segment

2.4 Market Forces (Analisi di attrattività - Analisi delle influenze esterne)

2.4 Business Opportunities

2.4.1 Abell's Diagram

2.5 Mission

2.6 Objectives

PART III: *Our project*

3.1 Our service

3.1.2 What is it (exploiting the lacks in traditional services, short description of the service)

3.1.3 Our clients (people interested in fashion and technology)

3.1.4 The places of the service

3.1.4.1 Flagship Store (design, location..)

3.1.4.2 Temporary Location (design, location..)

3.1.4.3 Web (our website)

3.2 The steps of the process

3.2.1 The starting point (creation of the client's account)

3.2.1.1 The “enrollment” experience (users, staff, time, relations, creation of the database..)

3.2.1.2 Technologies (cameras, softwares..)

3.2.2 The creative phase

(draft)

The Shima Seiki knitting machine are vital to our idea but at the same time face us with a serious constraint regarding the level of customization we can offer our customers: each unique design or measure of a preexisting design must be re-programmed to be produced on the machine. This means that when customers are finished creating their own custom-made garment, a trained professional must program this on the Shima Seiki's proprietary SDS-ONE™ software. This can be very expensive and time-consuming due to the fact that, for an entirely different piece, about 4 hours of programming are required and that qualified personnel apt at using Shima's software is scarce. The solution can thus be the following: create a zero collection made out of so-called building blocks, pre-designed by a hired fashion designer and made so that most combinations made with them lead to the creation of a "likeable" piece. The number of "building blocks" will be chosen so that the number of combinations possible makes it extremely (practically impossible) for a customer to see another person with an equal (or very similar, i.e. made out for 90% of the same building blocks) garment. After the creation of this zero-collection there's another choice to be made: program every single combination prior the opening of the service, so that any customer would only have to wait for the production lead time or wait for an order to arrive before programming it and thus only have to program the building blocks beforehand? Given the fact that, at least initially, the number of orders possible will for sure be less than the number of combinations we think that a "program-to-order" solution is preferable so the programming cost will not be fixed but variable depending on the success of the new business model. Still, however, the number of building blocks should be sized correctly in order to minimize the chance of "doubles" or near doubles. The idea of having building blocks allows us to program the building blocks on the SDS-ONE software prior the opening of the service (this will be a fixed cost) and then to simply assemble them to create the customer-made clothing. The assembling process will still require programming skills but will take much less time. Having building blocks also facilitates the creation of the computer-generated version of the garment, to be used as a try-on version before the actual purchase (see section 3.2).

(to be continued with products offered)

3.2.2.1 Create your own item (description of the interface, the library of customizable models, levels of customization)

3.2.2.2 Look at the "mirror" (virtual try on)

3.2.2.3 Share and enjoy

3.2.2.4 Technologies

3.2.3 The ending point

3.2.3.1 Production or not?

3.2.3.2 Placing an order

3.2.3.3 The Shima Seiki's technology

3.2.3.4 Production sites

3.2.3.5 Distribution

PART IV: *Business plan*

4.1 Strategy

3.3.1 Competitive Advantage (rispetto agli altri attori)

3.3.2 Future Opportunities

3.4 Market Analysis

3.4.1 Estimates

3.4.2 Strategy

3.5 Scheduling

3.6 Organization and HR

3.7 Feasibility Analysis

PART V: *Conclusions*

Thank you