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# **Virtual Runway Project**

## **Business Section of Requirements**

*Group 6*

### **1. Focus on the Business Problem**

#### **Context/ Background:**

The convenience of online shopping has eroded in-store retail. Harvard Business Review published an article stating, “The Limited is now focusing exclusively on e-commerce. It’s clear that an increasing number of customers don’t value the experience of shopping in physical stores” (Mohammed, 2017, pg.3). Mass campaigns do not yield the results desired by stakeholders, customer segmentation, gaining market share, and generating excess revenue will be the key components of retail businesses in the next few years. Customization will be the survival kits for retail chains to gain positive returns. In order to gain competitive advantages, retail businesses need to transform their thinking, strategy models, data infrastructure, and technology to win the customers they are losing in physical stores. Harvard Business Review forecasts that virtual reality and e-commerce appear to be the solution for retail in the next decades, “Applications using either technology stand to eliminate customer pain points, elevate customer service, and create a differentiated, personalized customer experience. The successful incorporation of VR [virtual reality] and AR [augmented reality] into retail models also has the potential to vastly change the way retailers are thinking about stores of the future” (McKone, 2016, pg. 3). Although VR is crucial to gain competitive advantages, collecting both internal and external raw data, analyzing data via VR are all equally important. In the following pages, we will further discuss the requirements for designing and incorporating data to attract and retain customers.

#### **Statement of Purpose:**

Customization is the key success factor for high-end boutique clothing stores. The purpose of the requirement document is to propose a business plan for the boutique to design a Virtual Runway (VRu) and to provide retail customers a better shopping experience. The internal customers, which include but are not limited to salespersons and tailors, who will collect customer profile data (customer name, residential address, age, gender, income, email, etc) as well as the customer’s stated style preferences and accurate body measurements (made by in-store tailors) to be stored as raw data for analysts to analyze and develop more technologically advanced tools to better enhance the customer experience in boutique stores.

#### **Objectives:**

Provide an enhanced high-end apparel boutique shopping experience to encourage existing customers to continue to shop there and do so more frequently, to attract and keep new customers, and in the process, drive continued annual growth and increasing net profit.

#### **Vision of End Product:**

We are offering a new level of service for high-end apparel boutique customers and a new tactic to motivate existing customers to shop there more often and to attract new customers and keep them coming back. This new service offering we call the “Virtual Runway” is to be built to serve the store's retail customers – giving them a richer, more fun, and easier shopping experience. Our internal users are the salespersons and the tailors, mainly because the latter will have to provide comprehensive measurement

data. This scenario fits the inverted pyramid analogy.

The Virtual Runway's major benefit for the retail customer is the ability to view virtually, while in the store, different colors of the same garment or different styles or entirely different clothes without having to try them on. This serves to narrow the choice of "finalists" to physically try on. This function will offer our customers a better shopping experience by saving time and effort. The second major benefit is that customers who have used the VRu in stores are able to virtually "try on" new seasonal items chosen from an array of items offered on the website or emailed to the customer. The available array would be customized based on the customer's personal style profile obtained on their first trial of the Virtual Runway and possibly updated in subsequent visits to the actual or the online store. The potential growth in online usage from the VRu could generate the need to hire more tailors to meet the demand based solely on the website. And these tailors could be scattered around the country.

We also intend to develop a more sophisticated model for customized recommendations based firstly on customers own stated style preferences, their past shopping history in this store, their online browsing, and input from salespersons and tailors as well.

#### **Assumptions:**

We assume that the virtual reality technology can be developed at a reasonable cost. A former retail magnate, now a very generous investor, has agreed to invest a large sum of money to have us establish a virtual runway in the high-end shop of one of his favorite designer/tailors. The investor considers his investment seed money for a technology that could be expanded into several upscale boutiques on Fifth Avenue and Madison Avenue in New York.

#### **Acceptance Criteria:**

All the users' personal data will be stored securely and used solely for the purpose of facilitating the on-line as well as in-store shopping experiences. A user will not be able to obtain any other user's personal data through our new application. Protection against data-spam/stealing will be working.

#### **Description of Requirements – including frequency that analytics will be performed (real-time, daily, weekly, monthly)**

We will need to monitor the data – by doing some basic analytics – on a frequent basis as this service rolls out to see how customers react to this new strategy. Analytics will be performed at least monthly regarding personal data changes made by our customers. In general analytics will be done in a timely manner based on our customers' specific needs and our own marketing needs. Once the VRu can be incorporated into the website, the analytics can be run daily or as frequently as we may need.

## **2. Data Requirements**

#### **Anticipated Data Sources:**

##### Structured data

Retail customer-provided data consisting of name, address, email, phone, age, income, credit cards, etc., will be incorporated into the Virtual Runway (VRu) database, once the customer has experienced the VRu. There may be a survey-like form asking VRu customers to identify their favorite designers, styles, fabrics, colors, collar and pocket types, etc. Also, past shopping history at the store should be added to

the customer profile. Once measured by the tailor, those body measurement data will be captured as well. All of these data should be updated whenever the customer returns to the store.

#### Unstructured text data

Some of the customer's and open-ended responses to questions about preferences would also be captured for analysis. The VRu customers should be encouraged to note anything that might be helpful for future purposes. In fact, if the customer allows his/her conversations to be recorded on audio/video, those too could be captured for analytical purposes. In addition, the sales person(s) should write notes, either as the customer is in the store and commenting on what he or she sees on the VRu or after the customer has left the store. These notes could be very helpful for follow-up marketing messages. Open-ended communications through the website should also be encouraged and captured. Besides, we will also send follow-up emails containing a feedback survey link regarding to the VRu experiences in store. This feedback data can be analyzed to determine customer's sentiment toward specific clothing styles or salesperson(s) to ensure a pleasant shopping experience and capture more detailed information for efficient future monitor purpose.

#### Unstructured image data

The centerpiece of this project is the Virtual Reality (VR) mirror in the store and the ability to show different garment types, styles, fabrics, colors, and sized on the customer without having to physically put the clothes on. All of these images should be captured. And they should be updated every time the customer returns to the store, if possible. Ideally, the technology could be adapted to show other styles to the customer online, as if in a "private virtual dressing room" on the website. At a later stage, a phone or tablet app could be considered.

#### Real-time data

VRu customer website visits and social media activity should be captured for future marketing purposes. Any other media mentions online or in the off-line media should be captured as well.

#### External (3<sup>rd</sup>-party) data

There will be external style, fabric, garment image data that could be used for future trials on customers. It is important to monitor other fashion websites and social media for the latest and upcoming fashion trends, and to gain a better knowledge of competitors' data.

Data are structured, unstructured, in text and images formats. Utilizing machine learning and image recognition should give us the competitive advantage of having the best value high-end clothing compared to our competitors and help us stay ahead of them as well.

#### Importance of UX

User experiences are of utmost importance. Our goal is to provide an exciting, yet pleasant shopping experience in-store along with easy search and navigation on the website and mobile devices. Our priority though is the in-store experience. So we will constantly monitor and evaluate the technical VR performance characteristics of the technology we will be using. In fact, we will probably be doing a lot of experimenting with different technologies. We understand that there will likely be technical data in terms feedback delay times, response times, sensor adjustments, color density and accuracy, etc., that we will capture for analysis. In addition, we will look to have our customers give us their verbal feedback while they are using the VRu and we will try to capture that in recordings or note-taking. And we will ask customers to fill out a short survey in store to do their part in making the experience even better. We will also use Google Surveys to capture feedback to make this an ongoing effort to be state of the art in-store.

We will also use online analytics tools, such as Google Analytics, to evaluate website and mobile usage and user experiences. The tool would provide a page view, bounce rates, conversion rates, and time spent on each page. All these datasets would be useful to examine various users' behaviors and reactions to our contents on the VRu and website as well.

#### IoT / Machine learning

There would be machine learning opportunities for predicting future design trends by analyzing previous seasons, third-party designers, data from fashion bloggers, fashion magazines, etc.

#### **Anticipated Data Volume**

Out of 1,000 shoppers questioned in a 2013 Bain & Company survey, less than 10 percent had customized a clothing product (Sherman, 2014). Given that CustomMade, a leading e-commerce platform providing high-end custom made products, facilitates 65,000 items on the site, 650 (6500 \* 10%) is a presumable number of items we can list on the internet platform. Assuming one tailor makes 65 clothing items, there would be 100 tailors on the site.

Harvard Business Review suggests "it is estimated that Walmart collects more than 2.5 petabytes of data every hour from its customer transactions. A petabyte is one quadrillion bytes, or the equivalent of about 20 million filing cabinets' worth of text." (McAfee, 2014, pg. 5). With internal customer data generated in-house and external data from marketing companies for industry research purposes, we believe the high-end boutique store we envision will require about 0.5 petabytes of data per month or about 10 million filing cabinets worth of texts of data per month. The 0.5 petabyte of data per month will largely consist of videos and tracking of online navigation of VRu.

#### **Connections, Dependencies between Business Requirements and Data Requirements:**

Data should be able to help derive useful insights such as: Calculating the cost of acquiring customers and expected lifetime value (LTV) to the company; incorporating extra data types from third-party consulting firms that describe customers' purchasing behavior; developing models of how customers would respond to price changes.

#### **Data Timeliness and Reason (refresh periodicity, real time)**

The timeliness of the data is key. It should be refreshed on a regular basis. It may be possible to do so with phone photos sent to the boutique. The idea, though, is to have the image data updated whenever the customers come into the store, along with updated body measurements if possible.

#### **Archiving/History Requirements**

All data should be archived for as long as customers allow. Archives are designed for long-term storage of data. Thus the company should avoid low-cost hardware for storing archived data. It should construct backup solutions to maintain a redundant copy of archived data and keep replicated archives on a separate storage as a way of ensuring that it is available in the event of a disaster. The company should also establish clear policies defining what data should be stored in which tiers of storage based on the age of data and data type. Fashion trend data ages, so the company can reduce storage costs by placing the older data in less expensive storage, acting as a separate storage tier.

### **3. Other/ Optional Elements of Consideration**

### **Performance Requirements (response times)**

While the VRu is performing the task after inputting the required data, the response time should be within 15 seconds to show the complete virtual reality image/video for the customer. The delay should be as minimal as possible, but no more than 5 seconds.

### **Security Requirements**

When archiving data to a cloud storage, it is important to identify the sensitivity of the archived data by: addressing compliance around sensitive data such as the company's financial and web analytics data and customers' personal identifiable information; and by examining the quality (pros and cons) of the available cloud storage solutions before committing to an archive method. Although cloud storage is generally less expensive, it is important to ensure security so the cloud storage provider's reputation is of critical importance.

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