INCREASING DIGITAL FORMAT

Final Report

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REPORT CONTENT

OVERVIEW

Executive Summary

Dear Mr. Adam Zavala,

The technology consulting team “Artificial Clouds of Intelligence” is pleased to present the provisional project report detailing the business requirements for the Mad Labs inventory system. The purpose of the Mad Labs inventory system project is to provide a information system prototype and design that would enable Mad Labs Vapor to manage its inventory and orders more efficiently, and for customers to make online orders.

From our analysis phase, we have identified user requirements that will be used to build on. The team recommends options of full stack website server providers. Such options include hosting a full stack website that gathers data from a local database. A local database would be much easier to manage. The server can be hosted by any reasonable provider.

Artificial Clouds of Intelligence has developed a UX/UI prototype and a complete database schema that can be implemented in a relational database management system such as MySQL. This system will focus on the CBD oil product line. First, a filtration system will be set up for customers to easily find their favorite products. Finally, an email notification system will be implemented so that the customer may easily be notified about their order and retrieve it in a timely manner. With these systems put in place, Mab Lab’s business functions should be improved.

At Artificial Clouds of Intelligence we believe in transforming local brick and mortar vapor shops into giant clouds of business predators with the power of technology.

Sincerely,
Artificial Clouds of Intelligence

Client and User Description

Mad Labs Vapor is a local brick and mortar e-juice store located in Denton, TX. The shop is owned and operated by Adam Zavala, a retired analog cigarette smoker. The shop is right next to a beer barn with plenty of traffic from target customers, as well as competition from competitors.

Adam's mission is to offer customers an alternative to smoking cigarettes. The shop is constantly keeping track of new innovations within the vape industry including: CBD oil, nicotine juice, mods, and coils. Customer service is Mad Lab's edge over their competition. Zavala is well informed in his products and the vape industry. Zavala states that he really listens to customers and inform them on the products to try to deliver their desires. Mad Lab's online customers will be the other half of the user base. Usually the customers that are new to vaping would like a easy convenient process to purchase their supplies.

About the Business Problems

Mad Labs Vapor is in desperate need of web presence. They are a small team so the lines can get quite long. In addition, inventory at a small local shop can get quite messy and unorganized.

Being located near a large university, Mad Labs receives influx of customers daily. However, most customers do not come back because of the slow service time, and disorganization. They will leave unsatisfied and spend their money at Mad Lab's competitors nearby, or worse, go back to analog cigarettes.

The goal of the project

Business operations and sales at Mad Labs can be improved by making it easier for existing and potential customers to skip the line. The goal is to help Mad Labs Vapor provide their top-notch customer service by cutting down on wait times for great customers and having a way to organize inventory and orders.

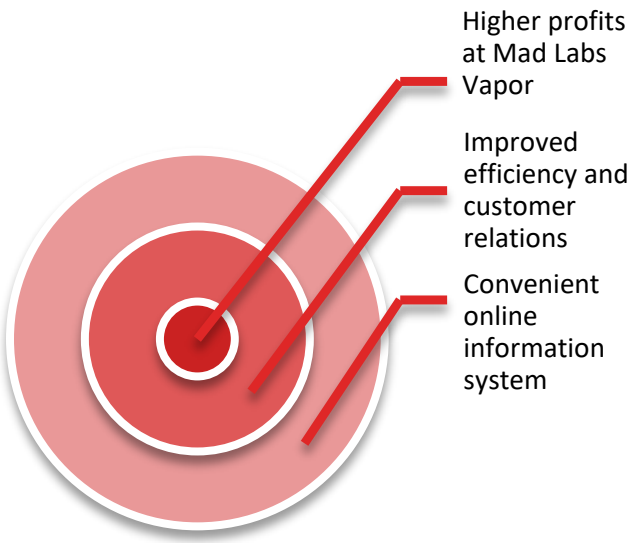
Artificial Clouds of Intelligence intends on creating a notification system to alleviate the wait for customers who place orders online. With an online order system implemented, an inventory tracking system will also be put into place so that employees can manage and account for the inventory for the shop. Both parties will be notified when and order is placed, and customers will later be notified when their order is ready.

Benefits for the client/other beneficiaries

The key tangible benefits from the development and implementation of the system are likely to include:

1. Increased in operational efficiency
2. Increased in customer relationship and satisfaction.
3. Improve operational structuring.

Figure 1: Goals of the project



Scope of the project

As a part of the Mad Labs Vapor information system project, Artificial Clouds of Intelligence will undertake the following:

1. Evaluate the existing business and operational process at Mad Labs Vapor gather information for improvements.
2. Evaluate and document functional requirements for an inventory and tracking information system.
3. Create the model database that will have a feature that can help an associate in company to track the order of the product.
4. The type of the product and sales over a period will be added.
5. Tracking the order of the product will help customer if there is an order issues.
6. Database will allow a customer to search for a specific product based on flavor, CBD content or type.
7. Tracking sale over of time will allow the manager to see which product has a lot sale and which one can go on sale.
8. Design a prototype website for user experience to display the system.
9. Develop queries that will demonstrate the database's capabilities.

Key project deliverables

- The project ID is to inform related parties about this intended project goal.
- The project walk-through is to give our preliminary findings regarding system requirements.
- The project proposal is to convince parties about the feasibility of this project and its approach.
- The Final Report summarizes business, user and system requirements.
- The database prototype includes relational tables and relationships.
- The UI prototype corresponds to the use cases.
- The final presentation entails our entire project development in a communicative way.

Limitations

The following activities are outside the scope of this project. They can be performed in the future:

1. Development and testing of a production version of the tracking and inventory system
2. Provided servers to host the system
3. System integration and maintenance
4. Software and hardware for production

SYSTEM REQUIREMENTS

The overall approach you followed in collecting your user requirements

Collecting the user requirements for this project was one of the first steps for Artificial Clouds of Intelligence. Our approach was to initiate a conversation based on the business and the owner's background. The purpose of this was to understand our client so that we could produce meaningful questions to be used in the interview later.

We forged our questions and presented them to Adam, the owner. The purpose of this interview was to understand the current process at Mad Labs, and what they feel they could improve upon.

We have also examined Mad Lab's inventory and its environment and location to get a geographic assessment. We have also done research into the vaping industry digitally, physically, and personally.

Key stakeholders of the system

The key stakeholders of the system include:

- Owners, managers, and employees of Mad Labs Vapor. Mr. Adam Zavala is the sole owner of the shop with several employees and managers. They will benefit for the inventory and tracking system and will also be key users of it. The operational functions will be of us to this group.
- Mad Labs Vapor's customers. The customers will be a mix of new and returning customers. With the system, they will be able to view products and its availability, as well as order and track that order to when it is available.

Sources of information

Key sources of information:

- Mr. Adam Zavala
- Customers from the shop
- Mad Labs Vapors inventory
- Websites of existing vapor shops: www.artisanvaporcompany.com

Goal of the system, high level description

Mad Lab Vapor's inventory and tracking information system will allow customers to view information about Mad Lab's products. They will be able to make orders on those products online. This system will also allow management to manage inventory and improve operational efficiency.

Description of system functionality

The key system use cases:

1. Place product order – The customer will use the filtration system to view products, then add products into the cart to later place an order.
2. Create product order – The manager will receive confirmation that a customer has placed an order. The manager will process this order to prepare for warehouse.
3. Fulfill product order – The warehouse will receive the product order from the manager. They will gather required ingredients to fulfill the order.

Relationship to other systems

The Mad Labs Vapor Information System is not a stand-alone inventory and tracking system.
Third-party applications to manage credentials and email API is required.

The key users of the system will include:

- Mad Labs employees
- Mad Labs customers

Use Case Name: Add Unit	**ID**: 1	**Importance Level**: High	
Primary Actor: Customer			
Short description: Customer orders product from online system.			
Trigger: Customer clicks place order			**Type**: External
Major Inputs	**Source**	**Major Outputs**	**Destination**
Product, product amount, customer information	Website, customer	Product purchase, Confirmation	Warehouse, Customer

Major Steps Performed

The use case involves the following steps:

1. The customer goes onto the Mad Labs website.
2. Browse products
3. Add product and amount to cart.
4. Input customer information.
5. Confirmation is generated and email is sent to customer.

Use Case Name: Add Unit	**ID**: 2	**Importance Level**: High	
Primary Actor: Manager			
Short description: The manager receives order from customer and creates product order			
Trigger: order confirmation is sent from customer			**Type**: External
Major Inputs	**Source**	**Major Outputs**	**Destination**
Product id, Amount, Customer	Database, Customer	Product order	warehouse
Major Steps Performed			

The use case involves the following steps:

1. The manager receives an order from the customer.
2. The product id and amount is determined from the database.
3. The manger creates the product order.
4. The order is sent to warehouse to complete.

Use Case Name: Add Unit	**ID**: 3	**Importance Level**: High	
Primary Actor: Warehouse			
Short description: Warehouse creates the product order received from the manager.			
Trigger: manager creates product order			**Type**: External
Major Inputs	**Source**	**Major Outputs**	**Destination**
Ingredients	Product order	Product	Customer

Major Steps Performed

The use case involves the following steps:

1. Warehouse receives product order from manger.
2. Warehouse gathers ingredients to fill the order.
3. Order is filled.
4. Product is ready and customer is notified.

Brief description of the key types of data being created, stored and manipulated

The Mad Labs Vapor information system allows managing information about products and customer communications.

Tables

The data model of the Mad Labs information system will comprise the following tables:

- TYPE – The type table contains type id, name and description.
- PRODUCT – The product table contains various entities associated with the product.
- ORDER – The order table contains the order id, date, quantity, and product id.
- PRODUCT/SALE – The product/sale table contains sale id, product id, and sale quantity.
- SALE – The sale table contains sale id and date.

Relationships and associative tables

The following are the key relationships among the identified tables.

- A type can have many products, but a product can only be one type.
- A product can be in many orders, but a order can only have one product.
- A product can be in many product sale, but a product sale can only have one product.
- A sale can have many product sales, but a product sale can only be one sale

SYSTEM DESIGN SPECIFICATION

Architecture design

The team from Artificial Clouds of Intelligence recommends that Mad Labs Vapor hosts its tracking and product system with a third-party servicer such as Amazon Web Services, Microsoft Azure, or Google Cloud Platform. The requires for the service should be compatible with MySQL, Window 2012 Server, IIS8 hosting, and the hardware should have at least 5GB of storage space with 100GB database storage.

Windows 7 or higher, or Mac OS should be the desktop client's operating system. Android and iOS should be the mobile operating system. Within that, the system can be accessed via browser on hardware specified below.

SW and HW recommendations

	Desktop Client	Mobile Client	Web hosting service
Operating System	Windows 7+, Mac OS	Android, iOS	Window 2012 Server, IIS8 hosting
Specialized SW	Desktop web browser	Mobile browser	MySQL
HW	Desktop or laptop computer	Smartphone, tablet	5GB storage space, 100GB DB storage
Network	Broadband internet (Spectrum, etc.)	Wi-Fi	

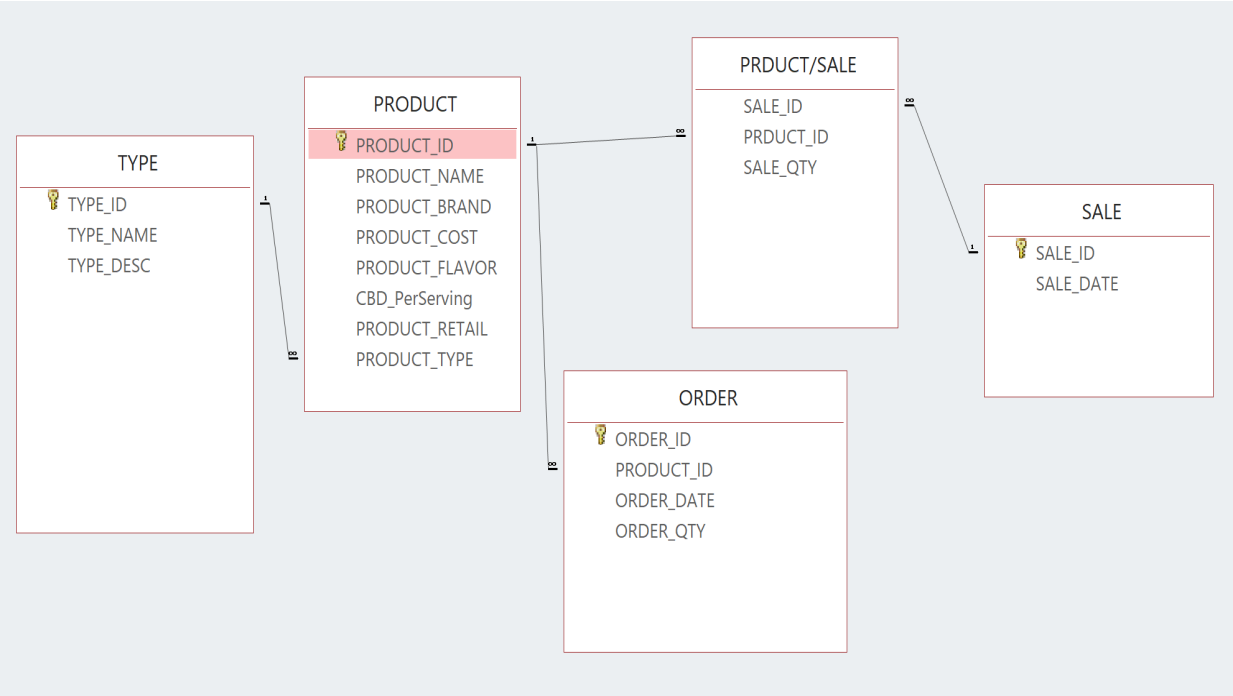
DB design consideration

The team from Artificial Clouds of Intelligence recommends that the data used by the information system be stored in a relational database such as MySQL through a third-party host.

The table below presents the mapping of Data stores into relational data tables

Data Store	Storage
Order	MySQL or Access: Order table
Product	MySQL or Access: Product table
Sale	MySQL or Access: Sale table
Type	MySQL or Access: Type table

The relational schema for the SQL Server database is presented below. The DDL statements are included in the attachment.



Key assumptions and principles

The tracking and product system is intended to be used by the following:

- Online shoppers
- Internal management

The key goals for the design of customer-facing user interface are:

- Ease of use for customers to locate product availability
- Ability to reserve items in store for pick-up

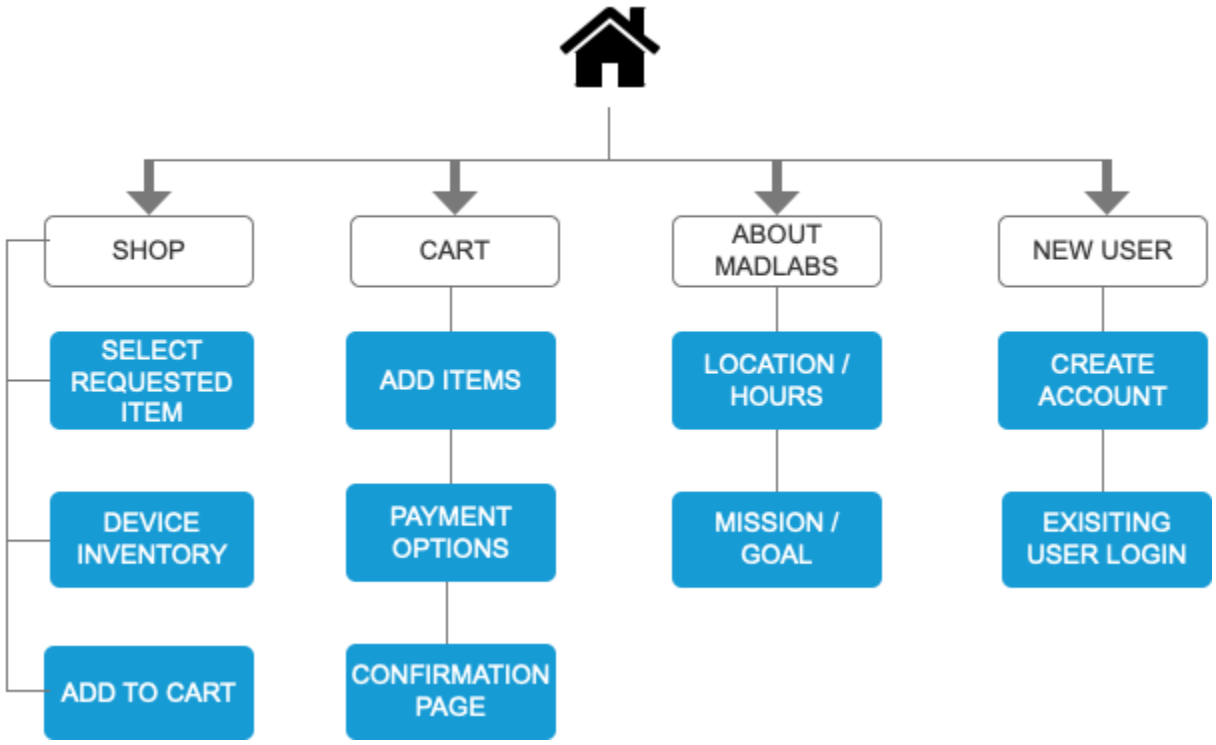
The key goals for the design of management-facing user interface are:

- Manage product orders
- Manage inventory
- Manage sales

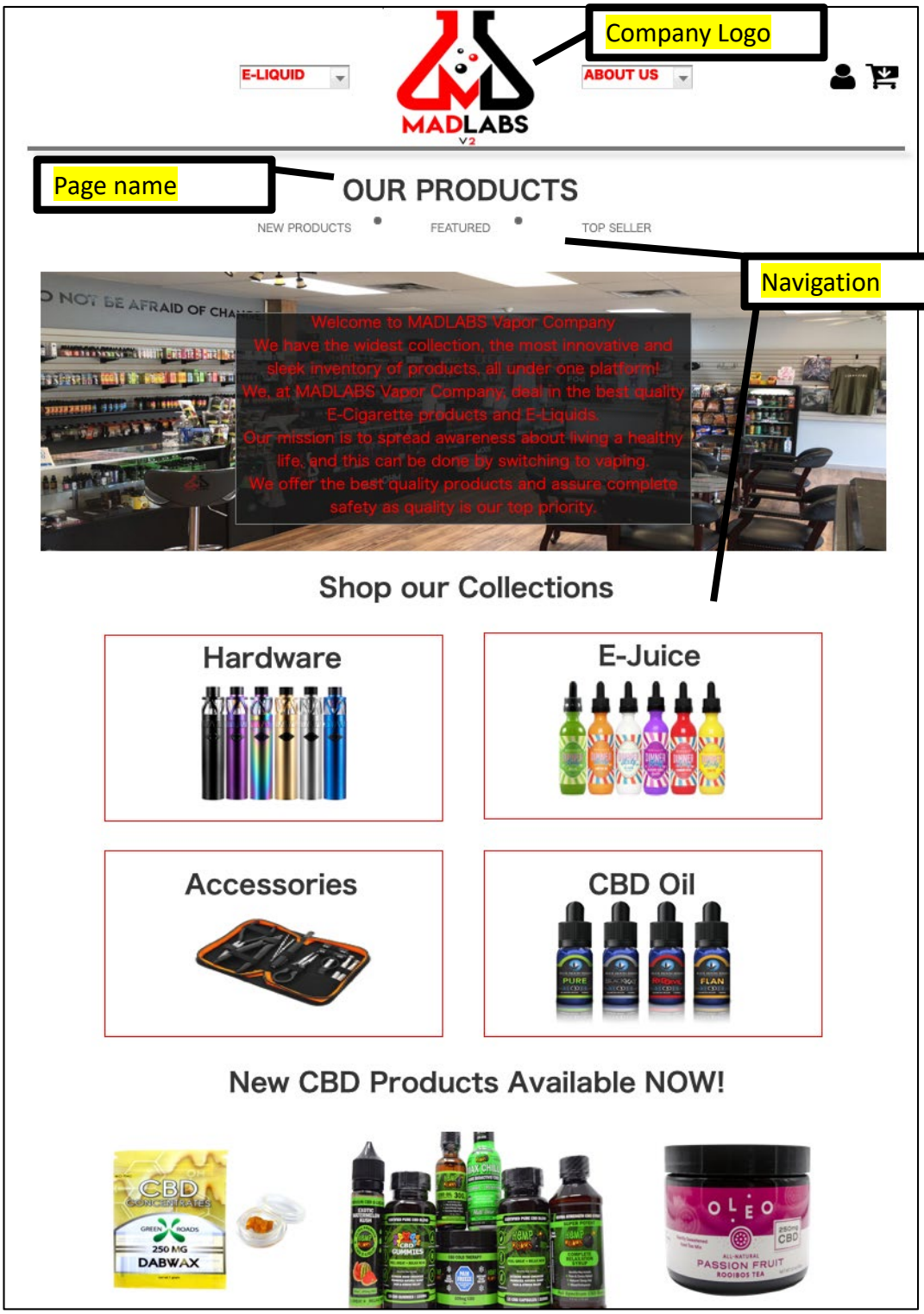
Navigation structure chart for the customer

The navigation structure for the main website is presented here.

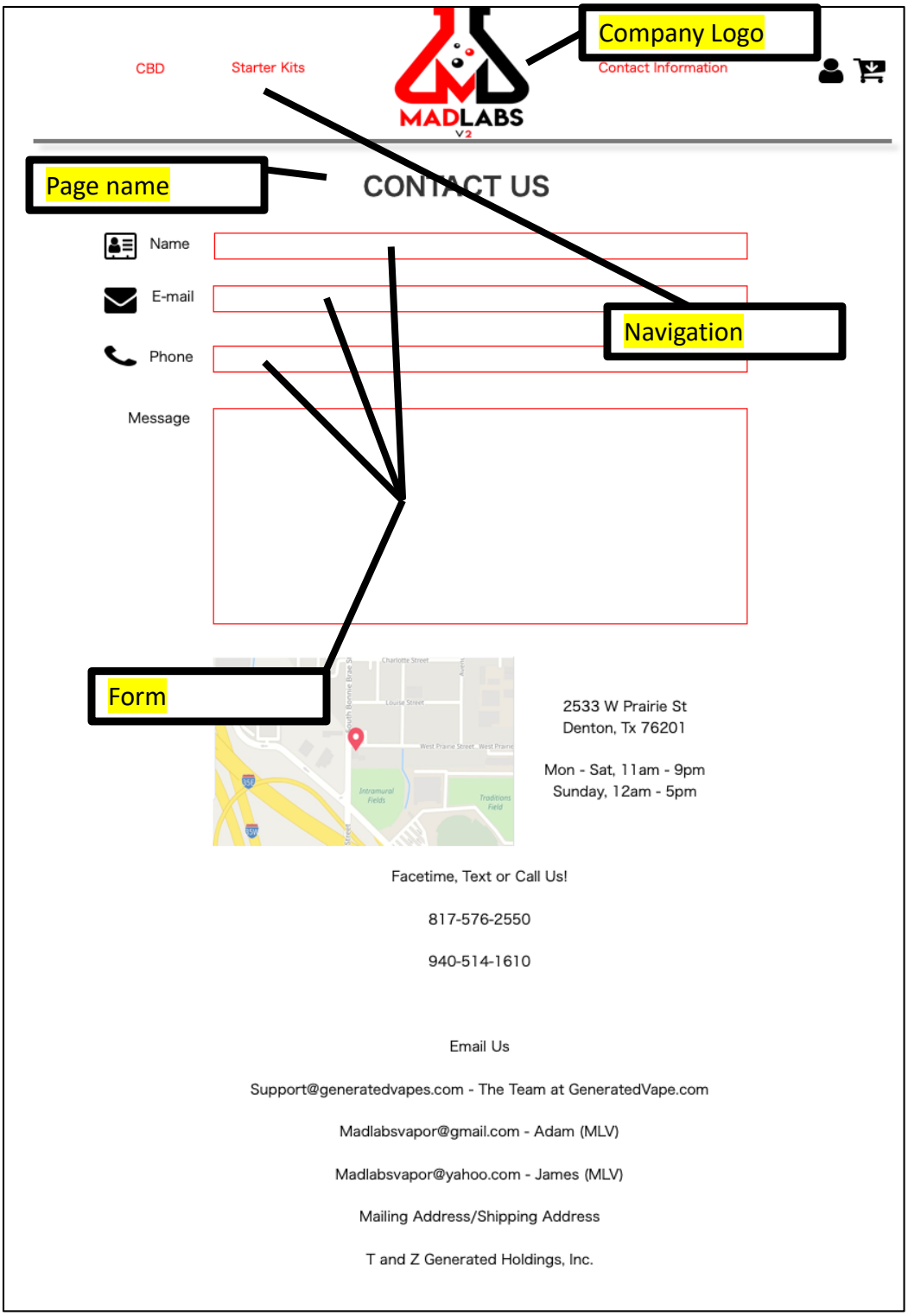
To meet the goals mentioned above, we have designed the navigation structure and interface Standards presented here.



Standard Page



Standard form



Review of options

Mad Labs has three options to use the tracking and product information system. The three options are:

- Custom development by a freelancer or company
- Shelf retail management software solution
- A Customer relationship management software as a service

The size of Mad Labs is local. We recommend Mad Labs hire a freelancer to create a custom development software for this system. Since Mad Labs is located close to a college, there will be plenty of computer science freelancers that will take up this job for a reasonable price.

Comparison of options

Option	Pros	Cons	Recommendation
Custom development by a freelancer or company	Customization, control, low cost	Low quality	Recommend
Shelf retail management software solution	Functional, customer support, control	High price	Second option
A Customer relationship management software as a service	Functional, customer support, scalability	Dependence on vendor, lack of control	No recommend

Testing plan

A testing plan for the acquisition option is standard.

- For a custom development, the plan should include a through background check on the freelancer. As well as unit, integration, system and acceptance testing.
- For the packaged solution, the system should be tested for customization, and additional vendor complications.

Documentation

The documentation for the information system should include an instructions and guide manual.
There should also be test logs initially that will determine the usability in the long term.

Conversion

The current processes at Mad Labs is manual. Because of that, we recommend a pilot conversion style that would be rolled out to new members and then finally existing customers.

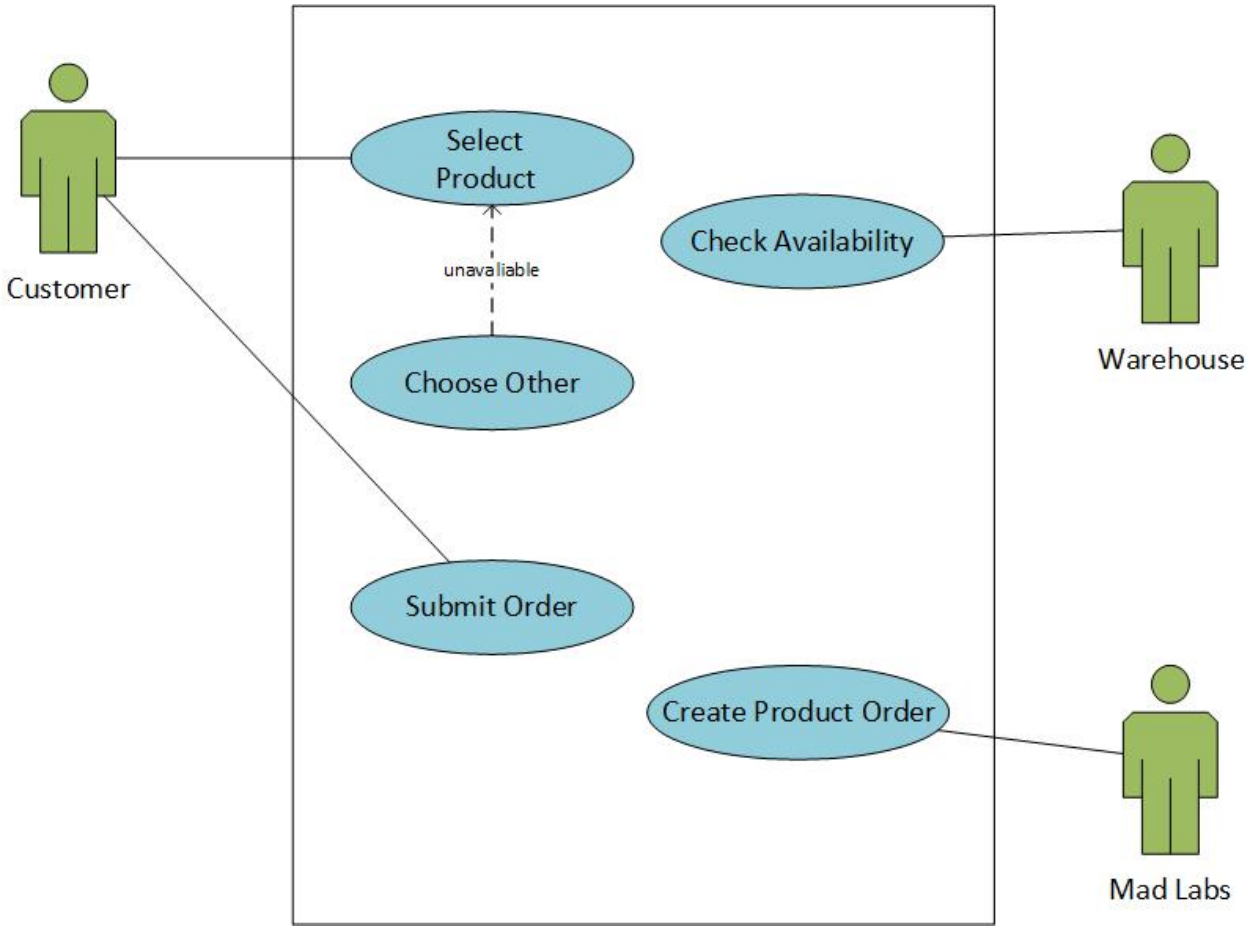
User training

User training is critical to the success of a business. Vendors should provide or organize system user training for the key users at Mad Labs. Training is usually done online with affordability.

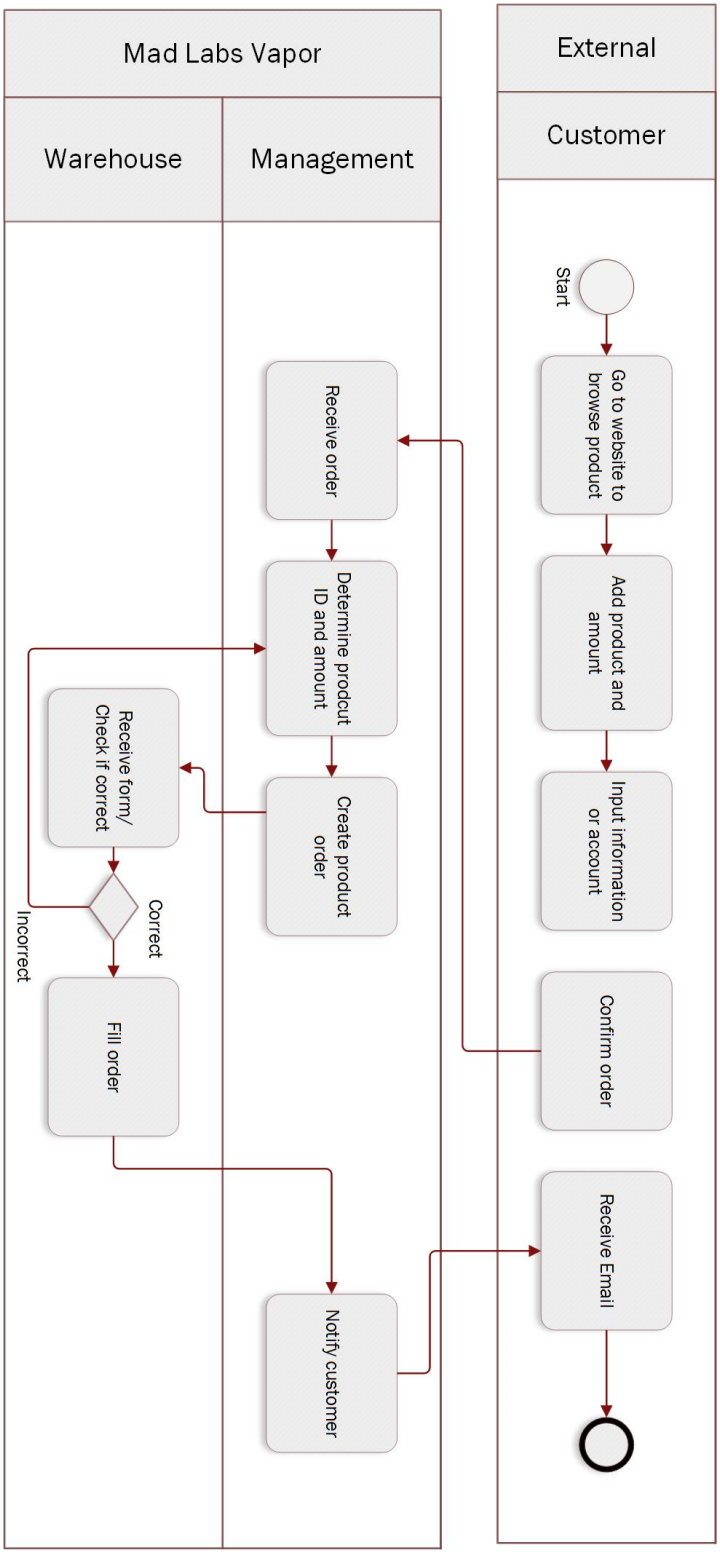
Management of Mad Labs should also organize internal training for the team with the new tracking and product information systems.

APPENDIX

Use case diagram

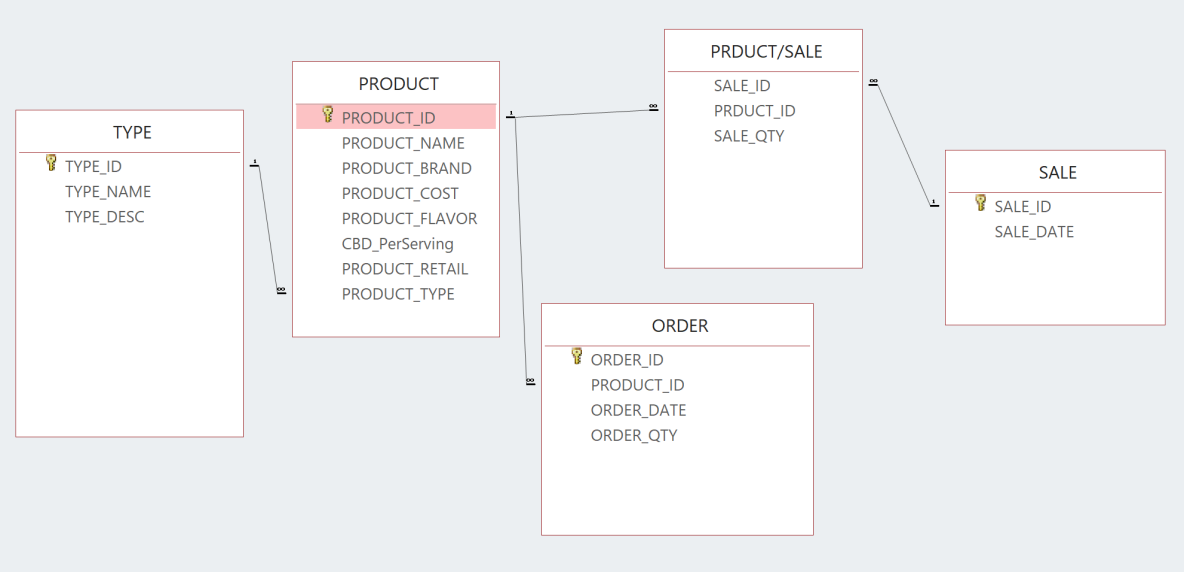


Level 2 DFD


Mad Labs Vapor
Warehouse
Management
External
Customer
Start
Go to website to browse product
Add product and amount
Input information or account
Confirm order
Receive Email
Receive order
Determine prodcut ID and amount
Create product order
Receive form/ Check if correct
Correct
Incorrect
Fill order
Notify customer

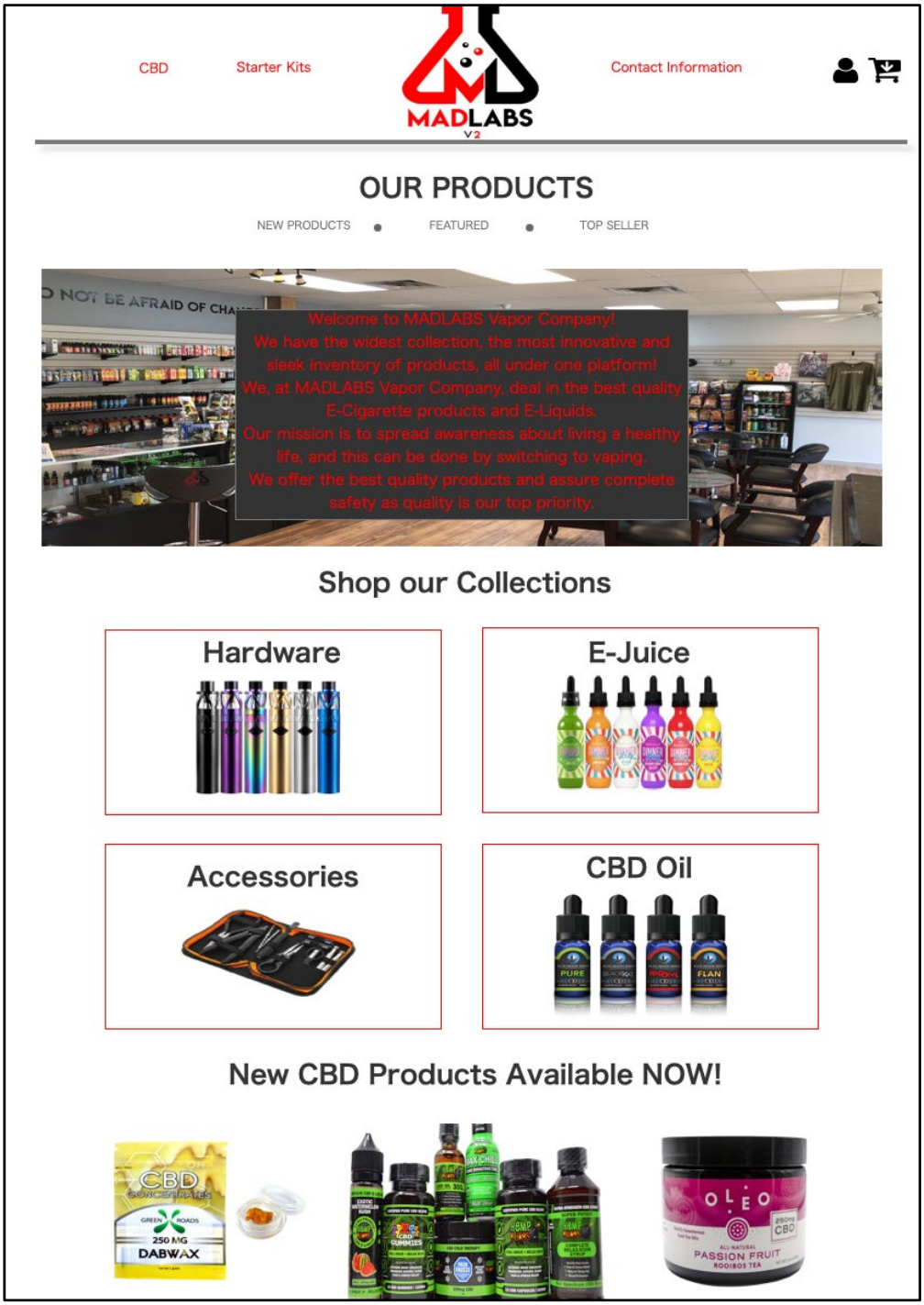
Entity Relationship Diagram

The diagram below shows the key data entities, their attributes and relationships among the entities.



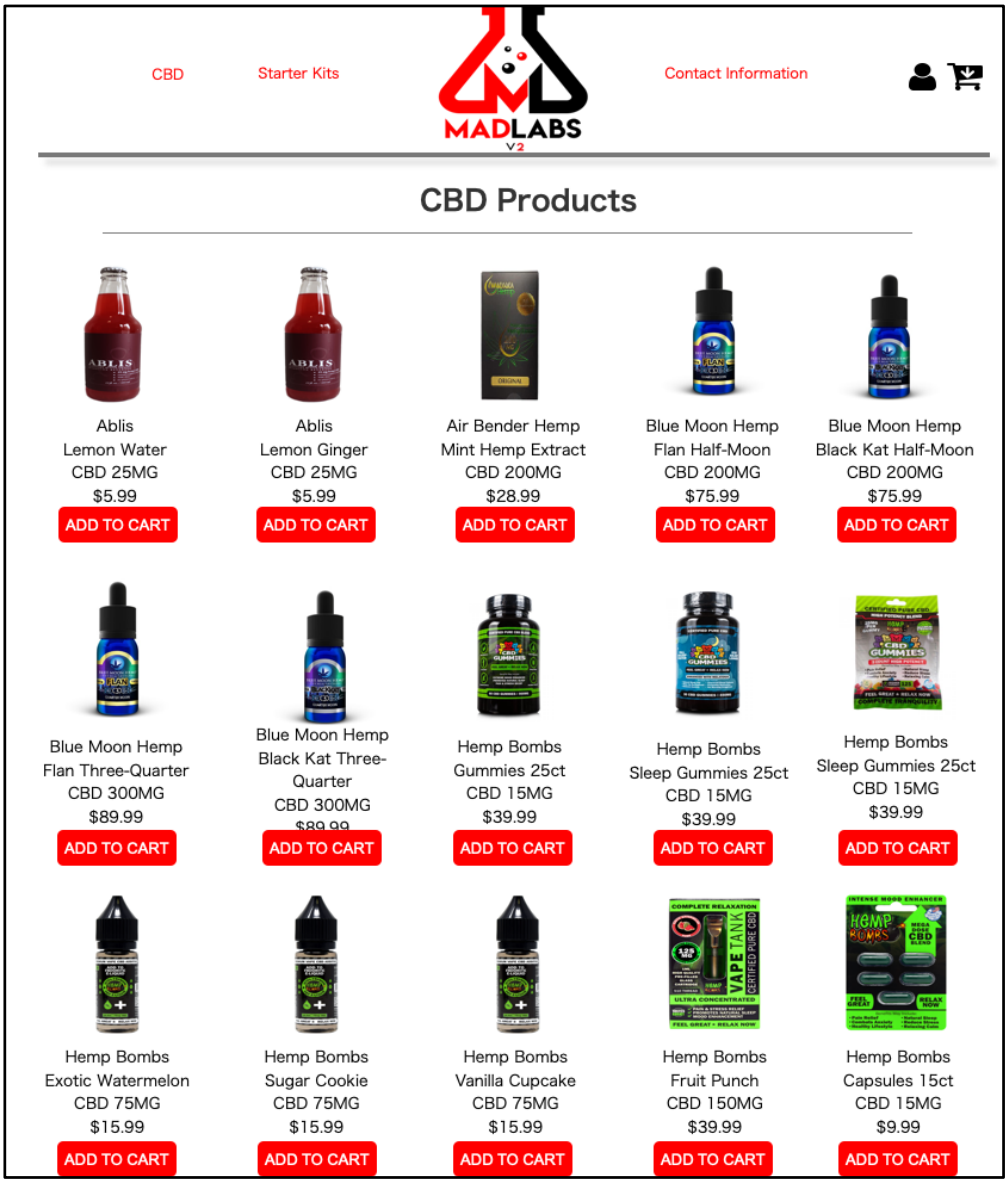
System prototype

Home page displays introductory information and products for returning and new customers. The goal was to make important information about our products from the beginning.



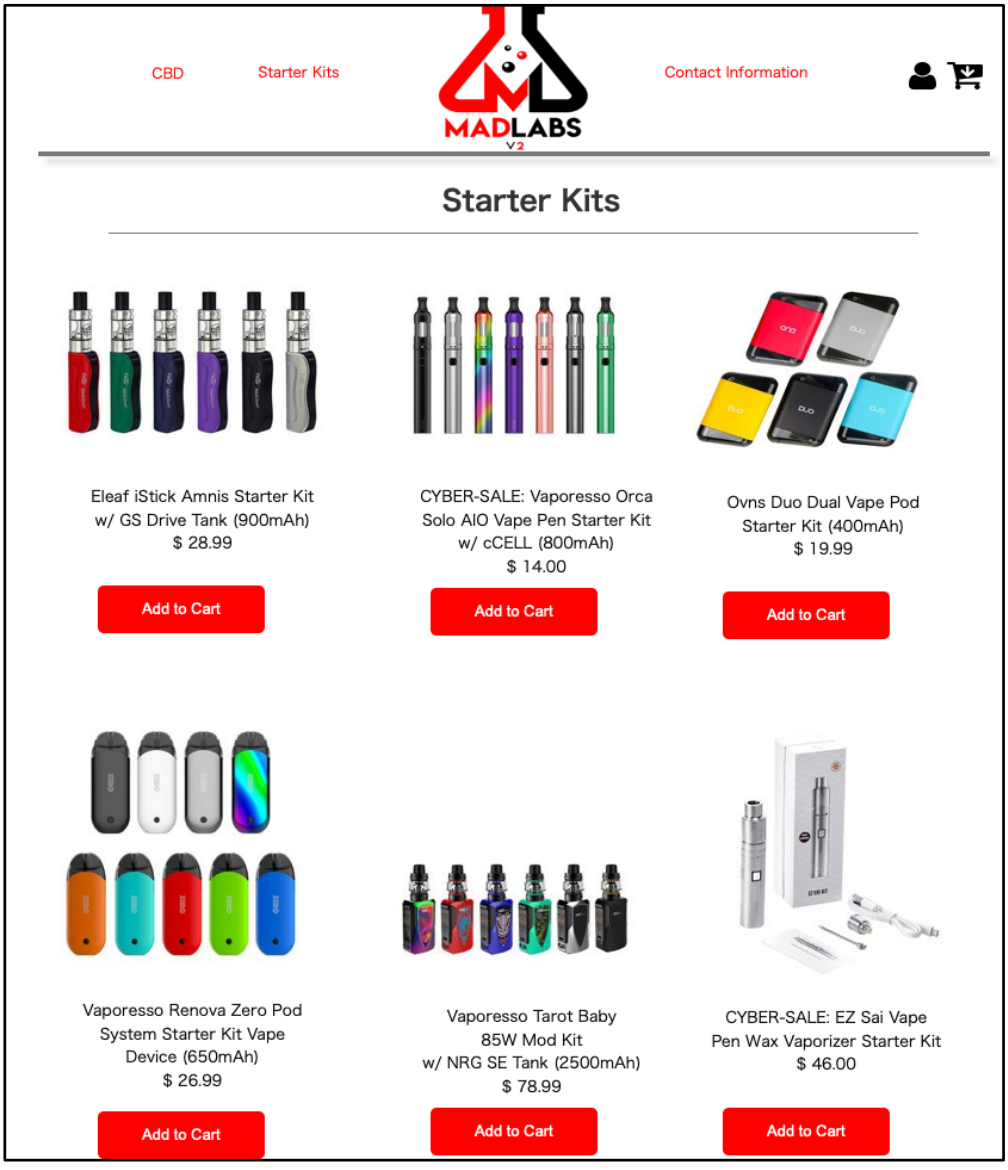
System prototype (cont.)

The products page shows all existing products customers can purchase. We included price and adequate information and dosage to inform the customers.



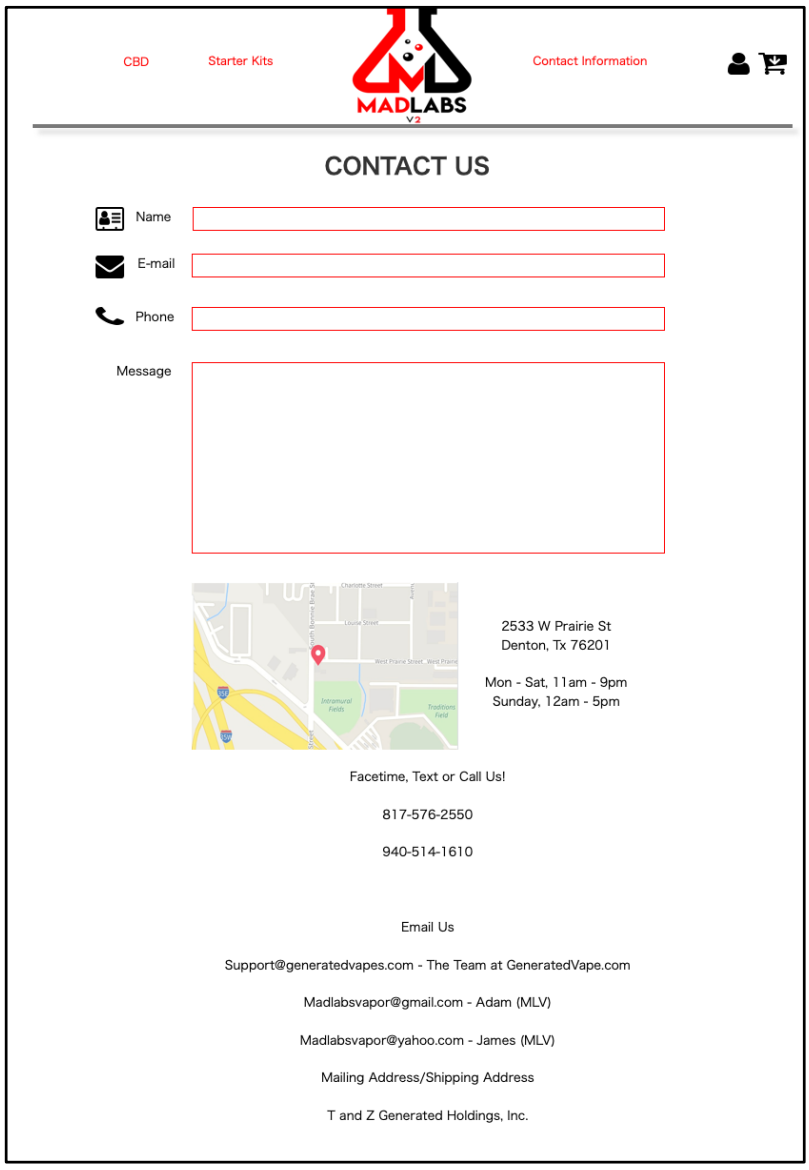
System prototype (cont.)

The starter kit page is targeted towards new customers. It includes the essentials for a new person to begin with so they can become loyal customers.



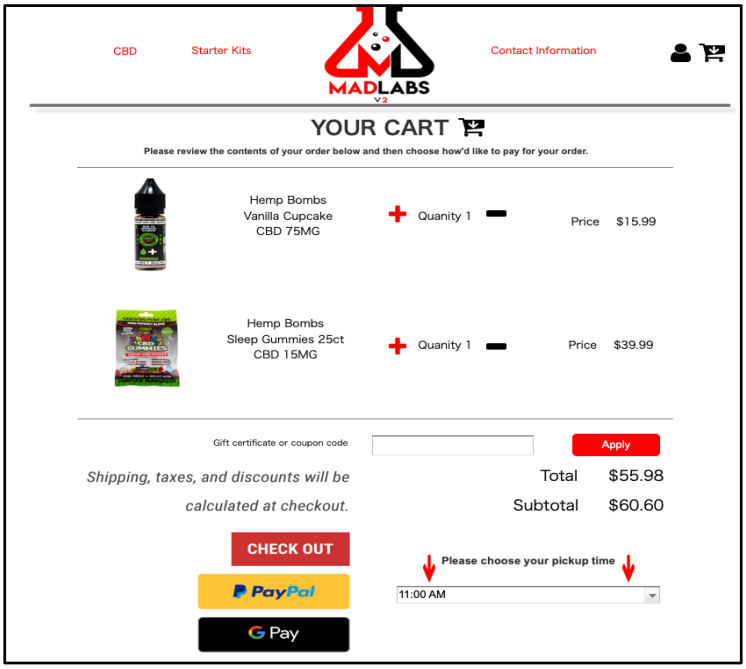
System prototype (cont.)

Our contact page allows for customers to ask any questions and concerns they have. Mad Lab's information is provided for location, hours, email, and phone

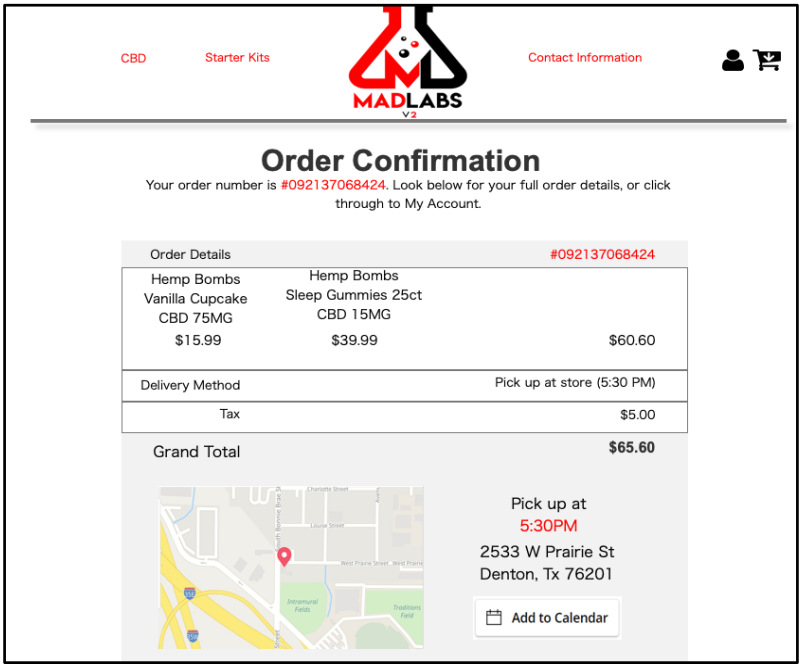


System prototype (cont.)

Below is the cart page. The products that customers are wanting to purchase are shown with price adjusted to quantity. They can select the time to pickup and apply a coupon if valid.



The order confirmation page displays what the user has added to the cart. All the purchase information is calculated and shown.



System prototype (cont.)

The new user page allows new customers or returning customers new to the system to create an account for future purchases and accessibility.