Graphiq Reality

Product Requirement Document

By Team Graphiq Content

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Revision History

10/9/2015 - Created PRD document and basic information.
10/16/2015 - Added User Stories.
10/21/2015 - Intro expanded and High Level System Architecture added.
11/23/2015 - Added more User Stories
11/24/2015 - Added UML Diagram

Introduction

Graphiq Reality is a website that will let you view data sets in 3-D and explore them in virtual reality using your phone. Not only can you view the data sets readily available on the website, but you can also import your own data in the form of a CSV file.

Glossary of Terms

API - Application Program Interfaces are pieces of software that interact with other pieces of software
CSV - comma separated values that store tabular data.
Data Visualization - the presentation of data in a pictorial or graphical format.
Google Cardboard - a cardboard apparatus that holds phones and allow them to be used as a
virtual reality device.
Heroku - Cloud-based platform for web application hosting.
HTTP (Hypertext Transfer Protocol) - a request/response protocol which allows web browsers to fetch information (webpage, pictures, etc) from a web server
JSON (JavaScript Object Notation) - a lightweight data format that uses readable text to transmit data objects of key-value pairs. It is used primarily to transmit data between the client and server.
Virtual Reality - replicates an environment that simulates physical presence

System Architecture: High-Level Overview

Graphiq Reality is a web application hosted on Heroku. It is written entirely in javascript and uses Node.js and Express framework as its web server. The front end is made with Foundation framework. Data is stored inside a PostgreSQL relational database.

When a data visualization is requested, the server will query the database for the specified data and the data will be processed visually on the client-side. Filtering or altering the data through slides will also be processed by the server in the form of a database query and the visual will adjust accordingly. The user can also upload their own data in the form of a .csv file into the server temporarily and visualize it through our app.

For virtual reality, there is no separate Android or iPhone app necessary, as everything is contained in javascript through the browser. The user only need to go to the website through their phone, select their dataset and visualization model, and select the VR

button. Then they are able to put their phone into a Google Cardboard device and interact with the visual through virtual reality.
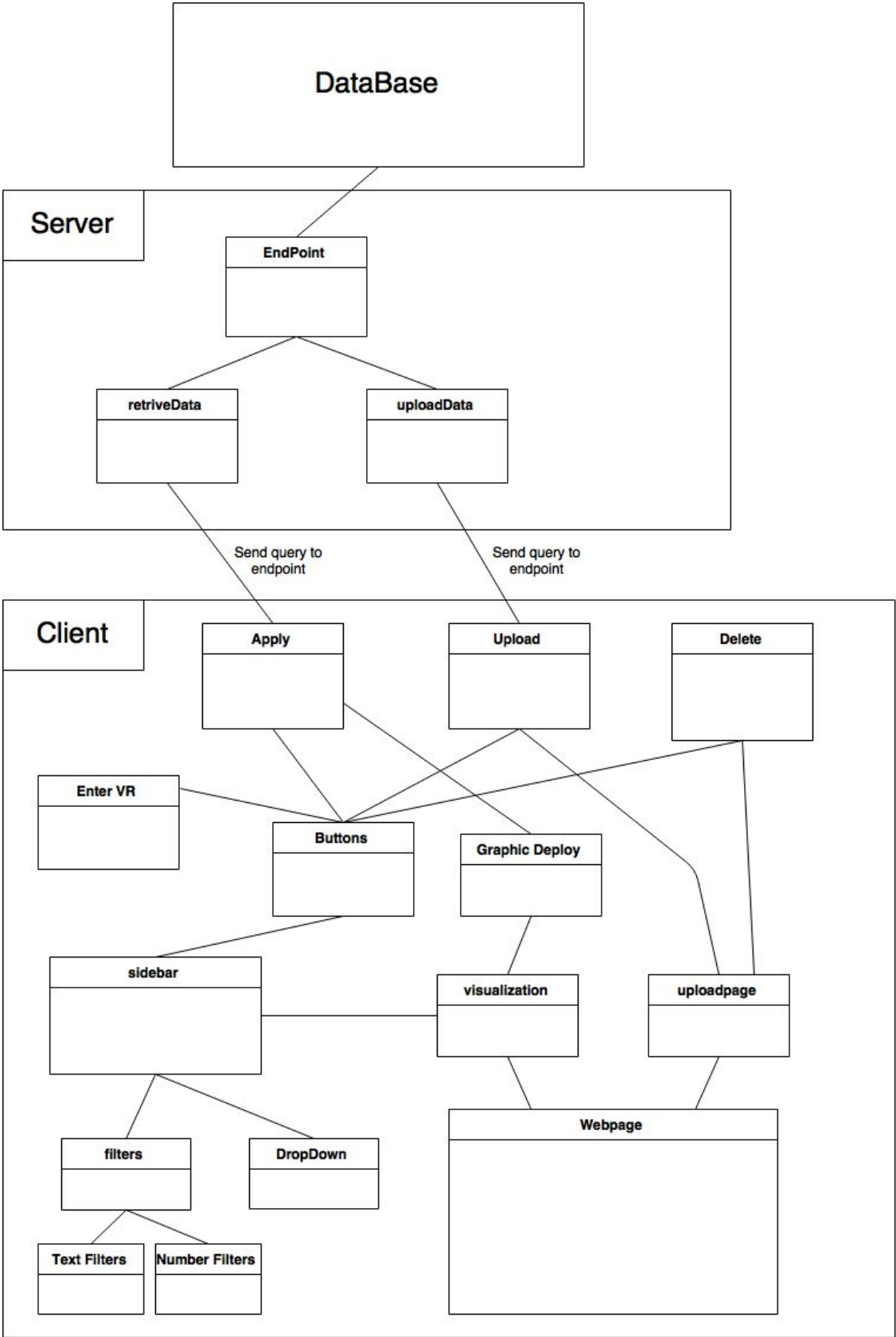
User Stories/Use Cases

1. As a user I want to connect to the website with my computer so that I can view the web application.
2. As a user I want to be able to connect to the website with Chrome and Firefox.
3. As a user I want to connect to the website with my iPhone so that I can view the web application.
4. As a user I want to connect to the website with my Android phone so that I can view the web application.
5. As a user I want to be able to view the data visuals through my desktop so that I do not necessarily need a VR device.
6. As a user I want to be able to view the data visuals through my Google Cardboard VR Device.
7. As a user I want to interact with the data through VR by camera movement in order for a fully immersive experience.
8. As a user I want to zoom in/out of my visuals so that I can more clearly see specific areas of my visuals.
9. As a user I want to be able to switch between data sets on my desktop using a drop down menu so that I can see multiple data sets.
10. As a user I want to be able to switch between data sets on my phone using symbol tracking so that I can see multiple data sets.
11. As a user I want to (filter) change the range of parameters shown in the data visualization so that I can further analyse the data.
12. As a user I want to import data through a .csv file into the application so that I can view my data visually.
13. As a user I want to be able to choose which data corresponds to which variables inside the data visualization.
14. As a user I want to highlight specific data points on the bar graph and scatter graph in order to view the specific data point.
15. As a user I want to choose which type of data visualization my imported data will go through.
16. As a user I want to see my data in full screen to better see the data visualization.
17. As a user I would want to upload a .csv from a URL.
18. As a user I would want to be able to manage my uploaded data easily through my own user account.
19. As a user I would want to share a link so others can view my data.

20. As a user I would want to be able to control the VR on cardboard with voice recognition controls.
21. As a user I would want to be able to change the colors of the graph and have control over how it is shown.
22. As a user I would want to have a easy guide for using the website.
23. As a user I would want to be able to embed an image or small 3D window of the graph on my website.
24. As a user I want to be able to save a still image of the 3D graph.
25. As a user I want to be able to share it easily through social media such as Facebook and Twitter.
26. As a user I want to learn more about the website through an "About Us" tab so that I can learn more about why and how the website was created.
27. As a user I want to view specific data set visuals that are specialized and more interactive but not customizable.
28. As a user I want to be able to customize text labels for the graph.
29. As a user I want to be able to view analytics such as mean, median, and mode of my data.
30. As a user I want to be able to donate money to the people who made the web application.

Prototype Code & Test Cases:

https://github.com/v-duong/data-vis-capstone

System Model:

DataBase

Server

EndPoint

retriveData

uploadData

Send query to
endpoint

Send query to
endpoint

Client

Apply

Upload

Delete

Enter VR

Buttons

Graphic Deploy

sidebar

visualization

uploadpage

filters

DropDown

Webpage

Text Filters

Number Filters

Technologies Employed:

- CSS
- Express
- Foundation
- Google Cardboard
- Heroku
- HTML
- Javascript
- Node.js
- PostgreSQL
- Three.js
- WebVR