CMSC 447

Team 3 (T3AM)

Software Requirements Specification (SRS)

Name	Role	Signature
Brett Smith	Point of Contact	
Brian To	Not currently assigned	
Kristina Bridgwater	Not currently assigned	
Denise Howell	Not currently assigned	
Eric Hale	Not currently assigned	
Daniel Howard	Not currently assigned	

1 Scope

This section shall be divided into the following paragraphs.

1.1 Identification

The purpose of this document is to give a detailed description as well as an overview of the requirements for the T3AM Gerrymandering Tool application. It will explain the purpose and the features of the web app, as well as system constraints, interfaces and external interactions with other applications.

1.2 System overview

The “T3AM Gerrymandering Tool” is a web based application that generates a state map with Gerrymandered congressional districts based on the user’s input. With the available inputs of current distribution, republican, democratic, or swing. Additionally, the application displays district information such as political party majorities and percentages. This software is for Costas Likakis, project sponsor.

1.3 Document overview

This section provides a chapter summary for each of the following chapters:

- Section two provides a list of all documents referenced by this specification. Additionally, this section identifies the source of all documents, with the date published, version, and author.
- Section three provides a detailed account of the application’s specification requirements. The chapter shall include a description of the internal and external system interfaces, it’s interface requirements and data requirements.
- Section four provides a set of test methods for each requirement listed as a way to determine if that requirement has been met.
- Section five provides the traceability from each requirement to and from the system.
- Section six is a general information section that contains any relevant information that helps in understanding this document. This may include background information, or a glossary of terms. This section contains a list of acronyms, abbreviations, terms and their definitions.
- The appendix section contains the raw data used in this document. This may include charts, graphs, tables, or other data pieces.

2 Referenced documents

Elfelt, Joseph 22 Jan. 2020, Version 1
mappingsupport.com/p2/political/google-map-political-district.pdf.

Aaron Bycoffe, Ella Koeze, David Wasserman and Julia Wolfe JAN. 25, 2018 Version 1
https://projects.fivethirtyeight.com/redistricting-maps/maryland/

Chrome Version Document: https://support.google.com/chrome/a/answer/7100626?hl=en

3 Requirements

3.1 CSCI capability requirements

3.1.1 Welcome Page

a. The application shall have a welcome page that describes the purpose of the application.
    i. The welcome page shall include the team logo at the top of the page.
    ii. The welcome page shall feature a checkbox for the user to agree to Terms & Conditions.
    iii. The welcome page shall include a Captcha feature to verify that users are real people.
    iv. The welcome page shall have a button to continue to the main page of the application after successful Captcha check.

3.1.2 Display Map of Maryland

a. The main page of the application shall display a map of Maryland.
    i. The map of Maryland shall be color-coded by congressional district.
        1. All Democratic districts in the state shall be color-coded blue.
        2. All Republican districts in the state shall be color-coded red.
        3. All swing districts in the state shall be color-coded yellow.

3.1.3 Interacting with the Map

a. Hovering over any district on the map with a mouse shall show percentages of each party for that district.
b. Hovering over any district on the map with a mouse shall show if there is a majority for any political party.
c. Clicking on a particular district shall show percentages in the right sidebar of the main page.
d. Clicking on a particular district shall show a list of zip codes in the right sidebar of the main page.

3.1.4 Updating the Map

a. Buttons shall be placed above the map on the main page that will update the map to display the desired political distribution.
    i. One of these buttons shall update the map to display the current distribution.
    ii. One of these buttons shall update the map to display a majority Democratic distribution.
    iii. One of these buttons shall update the map to display a majority Republican distribution.

iv. One of these buttons shall update the map to display a swing distribution.

b. Clicking any of the buttons described by requirement 3.2.4.a shall update the right sidebar of the main page to detail which distribution is displayed along with its status of gerrymandering.

3.1.5 Tweaking Party Percentages

a. The application should allow the user to tweak percentages for each party to re-district the state as needed.

3.2 CSCI external interface requirements

3.2.1 Interface Identification

a. The application shall provide a GUI, as described by the requirements in section 3.2.
b. The application should have an export button that creates a downloadable file representing each desired distribution.

3.3 Security and privacy requirements

3.3.1 Captcha Feature

a. The welcome page of the application shall include a Captcha feature, as described by requirement 3.2.1.a.iii

3.3.2 Malware and Injections

a. The application shall be hosted locally with Flask, therefore:
    i. The application shall not be affected by malware.
    ii. The application shall not be affected by SQL Injections.
    iii. The application shall not be affected by HTML Injections.

3.4 Computer resource requirements

3.4.1 Computer hardware requirements

a. The application should run on a computer with an Intel Pentium 4 processor or later that's SSE2 capable.

linu3.4.2 Computer software requirements

a. The app shall incorporate Google Maps API.
b. The app shall use Google Captcha.
c. The app shall run on Chrome version 80.
d. Backlog shall be utilized to manage tasks.
e. Google docs shall be utilized to create necessary documents.

3.5 Software quality factors

a. The main page shall not be accessed without accepting the Terms & Conditions.
b. The main page shall not be accessed without passing the Captcha check.

3.6 Design and implementation constraints

a. The application shall run on Windows 10.
b. The application should run on Linux 5.5.7 (28 February 2020).
c. The application should run on macOS Catalina.
d. The application should incorporate a database of electoral district information (To be updated)
e. The application shall utilize Flask to manage all web application functionalities.

3.7 Training-related requirements

a. Group members unfamiliar with Backlog shall be trained to utilize Backlog.
b. Group members unfamiliar with Flask shall be trained to utilize Flask.

3.8 Packaging requirements

a. The application shall be delivered via USB flash drive to the customer.
b. The application shall be uploaded to a public Git repository.
c. The application should be distributed as a RPM package.

3.9 Other requirements

a. Unit tests shall be created to test at least 50% of the code.
    i. A report shall be generated to confirm that 50% of the code is covered.

3.10 Precedence and criticality of requirements

Criticality of requirements are listed in this order from highest to least.

1. For security reasons it is critical that the main page cannot be accessed without accepting the Terms & Conditions.
2. For security reasons it is critical that the main page cannot be accessed without passing the Captcha check.
3. At a minimum, the application shall produce a fully functioning map of Maryland.
4. Clicking a button, as described by requirement 3.2.4.a, shall produce a gerrymandered map of the user's choice.
5. All other requirements are equal priority.

4 Requirements traceability

This section defines where each requirement came from.

3.1.1 Welcome Page - Requested by customer

3.1.2 Display Map of Maryland - Requested by customer

3.1.3 Interacting with the Map - Requested by customer

3.1.4 Updating the Map - Requested by customer

3.1.5 Tweaking Party Percentages - Requested by customer

3.2.1 Interface Identification and Diagrams - Requested by customer

3.3.1 Captcha Feature - Requested by customer

3.4.1 Computer hardware requirements - Specified by group member

3.4.3 Computer software requirements - Specified by group member

3.5 Software quality factors -Specified by group member

3.6 Design and implementation constraints - Specified by group member

3.7 Training-related requirements - Specified by group member

3.8 Packaging requirements - Specified by group member

A. Appendixes

CSCI - (Computer Software Configuration Item) A group of software treated as a single entity.