Functional Spec: Partisan Gerrymandering Web Application

Contents:

1. **Use Types and Use Cases**

   Pozefsky link to examples:
   https://wwwx.cs.unc.edu/Courses/comp523-f16/functional_spec.php

   One user class:
   1. *User navigates to web application.*
   2. *User sees an interface with a form for them to submit - does not need to login.*
   3. *User uploads a recent version of a redistricting map.*
   4. *User selects criteria (compactness, Reock score, etc.).*
   5. *User data submitted to R backend.*
   6. *Black box outputs plots and tables for the selected criteria.*

2. **Requirements**

   Client Server Model
   Node.js
   RESTful API
   R Backend
   Multiple Map Capability
   D3.js
   Dc.js

3. **Interfaces**

   a. **Website**
      i. **The user will be able to upload tentative shape files and in return to see how the redistricting measures up to certain pre-determined metrics.**
   b. **API**
      i. **Developers will be able to access the API in order to build a client that visualizes data for a certain state given the statistics.**

4. **Data Sources**
   a. **Shape Files (User Provided)**
      i. **.shp: The main file that stores the feature geometry.**

ii.   **.shx: The index file that stores the index of the feature geometry.**

iii.   **.dbf: The dBASE table that stores the attribute information of features**

iv.   **.sbx: The files that store the spatial index of the features.**

v.   **.prj: The file that stores the coordinate system information.**

b. **Voter Tabulation Districts (VTDs)**
   i. **Geographic Data Sources**
      - **NCGA website**
      - **United States Census Bureau**
   ii. **Information Provided from Geographic Data**
      - **Area of VTD (2010)**
      - **Population counts**
      - **County membership of each VTD**
      - **Shape**
      - **Location**
      - **Perimeter lengths shared by VTDs (extracted by ArcGis)**
   iii. **Minority Voting Age Data Sources**
      - **NCGA website**
   iv. **VTD Vote Counts for House Elections**
      - **Harvard's Election Data Archive Dataverse** **(2012)**
      - **NCSBE Public Data**