CS:5800 – Fundamentals of Software Engineering Team 11

(TBD) Election App

# Aims and Objectives

## “Customer seeks to build a state of the web application for their election management system. The goal is to build an integrated application system integrating demographics, voter registration, and configurable ballot management, voting with paper trail, results and system administration.”

# Process Guidelines

## Customer prefers to have an interactive approach to software development and would like to see intermediate versions of the proposed software.

## Customer approval is required for document formats.

## An iterative development model is preferred with Screens, Navigation and some of these functions being delivered first.

## The customer would like to see full documentation of the process you would follow.

# User Requirement Specifications (URS)

## User friendly UI

## Minimum data entry

## Data transfer from context sensitive help screens

## FAQ and help page

## Mobile and desktop functionalities

## Email Notifications

## Id / Password Based Authentication with Security

### Invisible password

### Structure of password/password requirements

#### Be at least 8 characters in length.

#### Contain at least 1 lowercase and 1 uppercase letter.

#### Contain at least 1 special character (!@#$%^&\*)

#### Contain at least 1 number (0–9)

### Password/ ID retrieval policy

#### Forgotten password/ID through email only

#### Answer security question

## Password change policy

### Forgotten password : password change

#### Password reset using new random string and sent via email

### Normal password change

#### Requires old password

#### New password can’t match the previous password

# Software Requirements specifications (SRS)

## 3 Levels of Users

### Suppliers

### Managers, Administrators

### Users

## Customer must be able to collect demographics info on all residents,

## Register voters,

## initiate election cycles,

## Setup secret ballots for individual races,

## maintain voting stations (precincts),

## associate voting stations with voters,

## present an online ballot to authenticated voters with only the races that the voter is eligible to vote on

### Assume there are some races in which only some voters can vote on

#### For example one can vote only for the House representative of the congressional district they are residents of

## tally the election results ,

## be able to verify the election results with manual counting of votes with the paper trail the voting system supports,

## Maintain secrecy of voter identity,

## provide for system admin functions.

## A voter can only vote once in an election cycle.

## To be eligible to vote the individual must be citizen of the country with a government provided id.

# Roles and responsibilities

## Junyan

## Heather

## Ru

# Storyboard

## Home Page

## Log in page

## Forgot my password screens

## Account registration screen

## Landing page (following successful log in)

## Create Electoral Race

## Create Ballot

## Manage Electoral Races

## Manage Ballots

## Voting Page

## Profile Settings

### Change security questions

### Change password

### Update Natural geography area (Update’s electoral)

## Demographics

## Users

### Can only see users name/precinct

### Allows for upgrading from member to higher status

# Tools

## [MEAN Stack](http://www.bradoncode.com/tutorials/learn-mean-stack-tutorial/)

### MongoDB (Database)

### ExpressJS (Web Framework)

### AngularJS (Front-end Framework)

### NodeJS (Application Server)

# Test Plans

# Risk management plans

# Estimation worksheet

# Master Project Schedule

## Week 1

### Log in

### Stack set up

### Home page

## Week 2

### Registration

#### Email verification

#### Validate government ID

#### Encrypt Password

### Forgot Password

## Week 3

## Week 4

## Week 5

## Week 6

## Week 7

## Week 8

## Week 9

## Week 10

## Week 11

## Week 12

## Week 13

# High Level Design

## Screens

## Database

## Architecture

# Process Model implementation

# Requirements for initial set of functions

## Voter address votes one precinct

## Precinct is the polling station for many addresses

## Natural geography refers to City, Country, and State, etc.

## Electoral geography consists of precincts, congressional districts

## Assume that Precincts never span across geographical units like City, County, and State

## Elections are held often 2016 Nov General election is an example

## There will be many ballots in an election though the A Ballot is specific to a Precinct and a User

## Ballot is configurable; this software must be usable for any election subject to assumptions laid out here

## Electoral Race is the election for an office

## An Electoral Race presents one or more candidates

## An electoral race is conducted over 1 or more precincts

## A Ballot has one or more electoral race in it

## The result of an electoral race is the accumulation of votes across the associated Natural Geography unit

# Analyze

## SRS

## Models

## Analysis

## Data Dictionary

## Specific Requirements

# Required Modules

## Administrator, users, managers

## Voting functions

## Search, Home page etc.

## Email notifications

# Use Cases

## Authentication, Forgot password, security questions

## Demographics Search

## Demographics of Residents entry

## Natural geography entry / query / update

## Electoral geography entry / query / update

## Election

## Offices / Races in each precinct

## Ballots

## Sys Administration tasks

Questions and Answers:

# Week 1 (Feb 5) [Heather]

# **Question**: What standard of security for password is needed?

# **Answer:** Invisible password is enough (Basic encryption is better)

# **Question:** What are the "desired demographics" for a user?

# **Answer:** "The standard values". Assumption: Name, age, location?

# **Question:** Is a user able to register and vote right away or do they need to be approved by an admin?

# **Answer:** Auto-approve users if their government ID is valid

# **Question**: What is needed to be a valid voter? Does only the government ID really matter? What about things like age restrictions?

# **Answer:** The standard 18 years old still matters, and other "normal voting requirements"

# **Question:** How do you want to handle the government ID part of the registration? Is this an admin thing or something for us to validate?

# **Answer:** They should pass in something like Voter ID number or Driver License #, but it isn't required to actually do something. (It would be a bonus feature to use some api to do so though.)

# **Question:** When a user registers, do they need to verify their email, or do we just accept it?

# **Answer:** A confirmation of an email is required.

# **Question**: How do you define an election cycle? Is this a system feature or an admin defined one (can be changed per district/etc)?

# **Answer:** It's a system feature, and is defined as a "normal US election cycle".

# **Question:** What's the difference between each level of administration?

# **Answer:** Was not sure at this time

# **Question:** Do you have preferences on the name/logo/color/general UI?

# **Answer:** No preferences - it's entirely up to you

# **Question**: How much testing do you want implemented? Is code coverage a matter to consider?

# **Answer:** It should be tested for sure, but other details, I'm not sure.

# Expect a lot of changes to the project scope.

# The basics of the class are trying to replicate what’s in the industry as much as possible.

# Week 2 (Feb 12) [Heather]

# **Question:** Based on our questions from last week, you said that to be able to vote a user should just need a valid id number, but you also said that an email must be validated. Which one is required for voting, or are both required?

# **Answer:**Both will be required. Also, consider Johnson County Registration Process (5 data points, once they are collected, it throws an email to the user, minimal entry, when you click the link, it works. Restrictions as well. Day prior to the poll you must be registered to be able to vote. It should be complete a day before the election). Apply for license (validation) when you travel you show the driver’s license it hits the db to check the db if it works. Test data, no real SSN. Test data, not needs to be test country / city / state /etc. Don’t need to enter 99 county data/etc, assume only 10/etc. But not really 2, reasonable

# **Question:** Further elaboration on testing would be nice - are you expecting a certain amount of code coverage or tests done? Or is whatever we do (Or don't do) fine?

# **Answer:**Cover at least the functions. Not really 100% required but should be tested

# **Question:**Last time, we asked for what the difference between each level of administration was, but you said you weren't sure. Is it possible to know what the answer to this question is now?

# **Answer:** Please clarify in class.  [Supplier is a typo?]

# **Question:** You asked for demographic searches in the project specification, but what exactly are you searching for? What is the goal of this search? Is this just the equivalent of a user list?

# **Answer:** Yes. We want to see voter demographics, precincts, stations, others.

# **Question:** You listed that users should be able enter, query, and update the natural and electoral geographic area, but how is this handled? Does a user need to update the natural geography while the system handles the electoral geography, and so on?

# **Answer:** We are looking for the electoral geography to follow the natural geography; if you are adding a State, for example, we should be able to map the electoral geography within the state boundaries. A good resource that we saw is this site: <https://gis.johnson-county.com/generalpollingplaces>

# **Question**: You asked for system admin tasks to be available on the system, but just are the system administration tasks. What are you looking to accomplish as system administration?

# **Answer**: Clarify in class

# **Question:**Is it one vote per election/ballot? If I change my electoral area/natural geography, for example, am I allowed vote again?

# **Answer:** Yes. We need to consider natural restrictions existing at a Federal / State / County level.

# **Question:** Is there a break period between changing electoral areas and eligibility to vote? For example, if I say I'm in Washington, do I automatically get approved to vote in Washington, or do I need to, for example, update my ID to a Washington ID, and so on?

# **Answer:** We are expecting checks implemented related to this. For example, what we know here in Iowa is as follows: If you have moved to Iowa from another state or to a different county in Iowa, pre-register to vote in your new county 10 days before general elections and 11 days before all other elections. We know you cannot claim the right to vote in any other place.

# **Question:** A feature you requested is 'analysis' but what kind of analysis are you looking for? Just the summary of the poles (who won and by how much) or something in more detail?

# **Answer:** Some that we can think of this early is demographic of votes per precinct, turnout of vote political affiliation. We would like to see some other analytics.

# **Question:** Another feature you requested is a 'data dictionary' but what exactly is a data dictionary, and what are you looking for in one?

# **Answer:** This is close to the metadata of your system. In your DB, for example:

# 

# Week 3 (Feb 19) [Ru]

# question: Are we allowed to use Mangolab?

# Answer: Sure

# Even parts are required, don’t just assume the MongoDB expert can do all DB parts.

# Have something like a DropBox which you can update every week for the questions

# Ideally: At the end of the day we want to be able to register on the phone or desktop, and we can do the phone/desktop login wherever. As a result, on either device, if we login (provided we’re registered and qualified) we’ll be able to vote.

# Week 4 (Feb 26) [Ru]

# Week 5 (Mar 5) [Ru]

# Week 6 (Mar 12) [Junyan]

# Week 7 (Mar 19) [Junyan]

# Week 8 (Mar 26) [junyan]

# Week 9 (Apr 2) [Heather]

# Week 10 (Apr 9) [Heather]

# Week 11 (Apr 16) [Heather]

# Week 12 (Apr 23) [Ru]

# Week 13 (Apr 30) [Ru]

# Questions to be scheduled

# How do you define an election cycle? Is that a system feature or an admin defined one?

# What’s the difference between each level of administration

# Name/Logo/Color/ui preferences : No preferences

# How much testing do you want implemented like is code coverage a matter to consider :

# kphp ?