Software Requirement Specification for Online National Election Voting

**1. Introduction**

This document describes the structural properties and software requirements of the Online National Election Voting System project.

**1.1. Problem Definition**

Manual voting system has been deployed for many years in our country. However, in many parts of our country people cannot attend the voting because of several reasons. To illustrate, sometimes people may not be in their own registration region and due to this fact, they cannot fulfil their voting duties. In order to solve these problems, there is a need of online election voting system in addition to manual voting system. After registering to system, the voters will use their votes at any field areas by using the system if they prefer online voting [1].

**1.2. User and Literature Survey**

Online voting has been used in lots of countries with the development of the

E-government technologies in the past years. Generally, in these countries the electronic voting is supervised by the presence of the independent electoral authorities. The specific electronic voting machines are used at polling stations for the voting operation [2].

The main users of the Online National Election System are the Voters, Election Candidates, Election Commission Authority and Election Station Supervisors.

**1.3. Definitions and Abbreviations**

The following is a list of terms, acronyms and abbreviations used by the Online National Election Voting System software package and related documentation.



**Requirements –**

**1.0 – Voter Registration**

ID: 1

Priority: High

Primary actor: Voter

Use case type: Detail, essential

Voter – wants to register to system.

Brief description: In order to use the system, the voters must register to system. This explains the registration process.

Precondition: None

Trigger: None

Normal flow of events:

1. Voter enters the system homepage.

2. He clicks the “register now” button.

3. The system prompts the application form.

4. He fills in the necessary information related with him in the application form.

5. He uploads a picture for Voter Identity Card (VID).

6. He sends the request for registration by using “send” button.

a. If the information is correctly entered the system prints a successful message.

b. Otherwise, it prints appropriate error message, redisplays the application form.

**2.0 Approve Applicant**

ID: 2

Priority: High

Primary actor: ECA

Use case type: Detail, essential

Voters - Wants ECA to approve their application Form

ECA - Wants to approve the Voters by checking Applications Form

Brief description: This describe how ECA will approve the application form of voter and generate the new account to that voter

Precondition: The voter should have filled his application form

Normal flow of events:

1. ECA selects the online voter application form from list

2. ECA checks the information of the applicant

a. If the given information is correct

i. ECA approves the form by pressing “Approve” button

ii. ECA generates the new online account to this new voter

iii. ECA prepares the VIC and generates password

iv. ECA sends VIC and password to address of voter

b. if the given information is not correct

i. ECA will inform voter about misinformation via postal mail

**3.0 Update Voters**

ID: 3

Priority: High

Primary actor: ECA

Use case type: Detail, essential

ECA: Wants to update all voters according to their state

Brief description: This describe how ECA updates online voters

Normal flow of events:

1. ECA selects on “Update Voters” from menu and displays that page

2. ECA click on “Update Now” button

3. The system checks online voters with respect to upcoming election’s voters list

a. If the voter exists in the list, the system updates the voter with respect to official the voter information.

b. If the voter does not exist in the list, the system deletes that voter from database.

**4.0 Open Candidate Account**

ID: 4

Priority: High

Primary actor: ECA

Use case type: Detail, essential

EC, ECA - ECA generates new accounts to EC’s

Brief description: This describes how ECA will generate all election candidates’ new accounts.

Normal flow of events:

1. ECA selects on “Create Candidate Accounts” from menu

2. System displays Create Candidate Accounts page

3. ECA opens a new form for every official Candidate

4. ECA fills the form according to candidate’s information

5. ECA presses on “Generate password” button

6. System creates an account and password for that candidate

7. ECA presses on “Print” button and the system prints that document

8. ECA finishes the task by pressing on “Finish” button

9. ECA sends candidate’s user information via postal mail.

**5.0 Login/Logout**

ID: 5

Priority: High

Primary actor: User

Use case type: Detail, essential

Voter – Wants to log into the system

ECA – Wants to log into the system

ECC – Wants to log into the system

Brief description: This describes how the users log into the system

Precondition: The user opens the login page

Trigger: The user enters his id and password

Normal flow of events:

1. The user enters his login id and password

a. If the login and password is valid, a session is opened

i. The security is verified

ii. The specific page of every user is loaded

b. If the login or password is not valid, the login screen is redisplayed with an error message

2. The user click on the logout button

i. The session is terminated.

ii. The login screen is displayed.

**6.0 Account Update**

ID: 6

Priority: Medium

Primary actor: User

Use case type: Detail, essential

Election Candidates – Wants to change password

Voter - Wants to change password

Brief description: This explains how the candidate can change his password.

Precondition: The user should be logged in into the system

Trigger: The user clicks the “Update Account” button.

Normal flow of events:

1. In the user profile there is a button labelled “Update Account” he clicks it to update his account.

- The system opens a new page to enter old password and the new one.

2. The user enters his old password. He then enters his new password

3. User clicks the “submit” button.

- If the old password was entered incorrectly, the system will print an error message and the form to change password will re-appear.

- If the old password was entered correctly the system changes password and prints a success message and redirects to his profile.

**7.0 View EC Information**

ID: 7

Priority: Medium

Primary actor: Voter

Use case type: Detail, essential

Voter – wants to see the candidates’ profiles in his own election region.

Brief description: By using this function the voters can reach information about the candidates’ CVs, promises and answers to asked questions.

Precondition:

-The voter should be already registered to the system

-The voter should have logged in to the system

-Account of the EC should be activated by himself.

Normal flow of events:

1. Voter selects the candidate from candidate list by mouse clicking.

a. If the candidate has not activated his profile then there will not be any link to his profile

b. If the candidate’s page is activated then voter clicks on the candidate’s profile link and EC’s profile page is displayed

i. By clicking the “CV” link voter can reach the general information about the EC.

ii. By clicking the “promises” link voter can view the EC’s election campaign.

iii. By clicking the “Questions/Answers” link voter can view questions/answers and send questions.

**8.0 Ask to Candidate**

ID: 8

Priority: Medium

Primary actor: Voter Use case type: Detail, essential

Voter – wants to direct questions to candidates about their election campaign.

Brief description: This explains how the voters use the system for asking questions to candidates.

Extend: View EC Information

Normal flow of events:

1. User clicks on the “Questions/Answers” link

2. He writes his question on the text field

3. By pressing “Send Question”, user sends his question

**9.0 CV Edit**

ID: 9

Priority: Medium

Primary actor: Candidate

Use case type: Detail, essential

Election Candidates – Wants to Add or Edit his CV contents.

Brief description: This explains how the candidate can Add contents to or edit his CV. The CV can be seen by voters.

Precondition: The user should be logged in into the system

Trigger: The user clicks the View and Edit CV button or link.

Normal flow of events:

1. In the user profile there is a button labelled “View and Edit CV” he clicks it to edit his CV.

- The system opens a new page that contains the candidate’s CV with data in it if any in edit mode.

2. The user edits his CV using the free editing template.

3. The user clicks “Save And Return” button to save the changes and return to his profile.

**10.0 Add/Edit Promises**

ID: 10

Priority: Medium

Primary actor: Candidate

Use case type:

Election Candidates – Wants to Add or Edit his promises, that is, what he promises to do to his people he will lead if they select him.

Brief description: This explains how the candidate can Add or edit his promises.

Precondition: The user should be logged in into the system

Trigger: The user clicks the Add or edit promises button or link.

Normal flow of events:

1. In the user profile there is a button labelled “Add or Edit Promises” he clicks it to add or edit his promises.

- The system opens a new page that contains the candidate’s promises with data in it if any in edit mode.

2. The user adds or edits his promises using the free editing template.

3. The user clicks “Save And Return” button to save the changes and return to his profile.

**11.0 Read/Answer Questions**

ID: 11

Priority: Medium

Primary actor: Candidate

Use case type:

Election Candidates – Wants to Read and/or answer questions from the voters before the election.

Brief description: This explains how the candidate can read and/or write answers to the questions asked by the voter-to-be.

Precondition: The user should be logged in into the system

Trigger: The user clicks the Read and/or Answer questions button or link.

Normal flow of events:

1. In the user profile there is a button labelled “Questions” he clicks it to read and/or answer the questions.

- The system opens a new page that contains the questions from the voters

- If there are questions the candidate clicks on the question to read and answer it on the provided answer text box.

- User can choose to return to his profile.

2. The user reads and/or answers questions if any.

3. The user clicks ”Reply and send” to save and send answers of the questions.

4. The system takes the user to the questions page

5. User clicks on “Return” button to return to his profile

**12.0 View Election Results**

ID: 12

Priority: Medium

Primary actor: Voter Use case type: Detail, essential

General public (Voters, ECs, ESS, etc.) – wants to see the election results.

Brief description: This describes the process of how the voters view the election results by using the system.

Normal flow of events:

1. He clicks on the election results link.

2. He chooses Election/Region/Political Party and presses click on button “show results”

3. The system displays the required information according to the selected choices.

**13.0 Open System**

ID: 13

Priority: High

Primary actor: User

Use case type: Detail, essential

Election Station Supervisor – Wants to initiate the system

Brief description: This use case describes how the supervisor starts the system/systems of the station of his responsibility

Precondition: The user turns on the system/systems

Trigger: The user enters his/her TCK, supervisorID and password

Normal flow of events:

The user enters his/her TCK, supervisorID and password

1. If the TCK, supervisorID and password is valid, a session is opened

I. The security is verified

II. The voting page is loaded

2. If the TCK, supervisorID and password is not valid, the login screen is redisplayed with an error message

**14.0 Mark Generate Password**

ID: 14

Priority: High

Primary actor: User

Use case type: Detail, essential

Election Station Supervisor – Wants to generate a password for a voter and check and mark him/her as “Has Voted”

Brief description: This describes how ESS checks voter’s voting condition and mark him/her as “Has Voted” and if voter wants to use the online system generate a password for the voter to be used in voting.

Precondition: The ESS opened the system

Trigger: The user enters voter’s TCK

Normal flow of events:

1. A screen displays asking for the user to enter voter’s TCK

2. User Enters voter’s TCK

A. If the voter with specified TCK has not voted yet

B. The menu appears with “online vote” and “offline vote” buttons

a. If user presses to “online vote”, the password is generated and printed

b. If user presses to “offline vote”, the voter marked as “Offline Voted” by the system

c. If the voter with specified TCK has voted or wrong TCK entered

I. The login screen is redisplayed with appropriate error message

**15.0 Vote Online**

ID: 15

Priority: High

Primary actor: Voter

Use case type: Detail, essential

Voter – wants to use his vote by using system.

Brief description: This explains voting process by using the system.

Normal flow of events:

1. Voter gets a hash password from the ESS.

2. Voter fills the Voter Identification Number (VIN), password and hash password areas.

3. Voter press “log in” button.

a. If the login operation is not verified the system prompts an error message and returns to login page.

b. If login operation is verified

i. The system will prompt the list of parties/candidates.

ii. Voter chooses one of the parties/candidates from list.

iii. He presses the “vote” button for voting process.

iv. If the operation is successful, voter marked as “Online Voted” by the system

v. System automatically returns to the log in page

**16.0 Enter Offline Votes**

ID: 16

Priority: High

Primary actor: Election Station Supervisor

Use case type: Detail, essential

Election Station Supervisor – Wants to enter offline vote results to the system

Brief description: This describes how ESS enters offline vote results to the system immediately after the voting period.

Precondition: The ESS opened the system

Normal flow of events:

1. A screen displays asking for the user to enter supervisorID and password

2. Supervisor enters supervisorID and password

A. If the TCK, supervisorID and password is not valid, the login screen is redisplayed with an error message

B. If the TCK, supervisorID and password are valid,

a. The security is verified

b. The screen displaying every Political Party/ Candidate and their input fields is opened

c. The ESS fills every PP / EC fields with the number of votes each PP / EC got and presses button “Enter Votes”

d. The system compares the number of votes ESS entered with the number of votes marked as “Offline Voted” for that station.

i. If equality holds the system stores given values to the system and the main page is displayed.

ii. If equality does not match, the screen displaying every Political Party/ Candidate and their input fields is reopened with an error message.