

Online e-voting system

This online e-voting system was designed and developed by Er. Dr. Ved P. Kafle when he was President of the Nepal Engineers' Association – Japan Center (NEA-JC) in 2009.

This system has been used several times in the elections of various organizations, such as NEA Election in 2011, NESAJ Election in 2011 and 2013, and NRN – Japan Election for ICC Members in 2011.

1. System Characteristics

This web-based e-voting system software has been designed with the due consideration to the following two points:

- (a) Privacy
- (b) Transparency

(a) The system protects voter's privacy:

Nobody except the voter himself/herself can know whom other voters have voted for.

(b) The system is transparent:

Every voter can see his/her votes after the voting result. The voter is assured that his/her votes were counted properly.

Note: In the list of votes, only the voter can identify his/her votes by using a unique ID generated by the system for the voter during his/her voting time.

2. Voting Procedure

The voting tasks are performed in three stages: before voting, during voting, and after voting.

Before Voting:

1. The Election Committee (EC) prepares a voters list, in which each voter is identified by his/her email address registered with EC. EC also assigns a password (a string of eight or more alphanumeric characters) to each voter.
2. EC uploads the voter's email and password to the voting website through a secured administrative webpage. The passwords are saved in the form of their hash values to make the password invisible to the system administrator too.
3. EC informs each voter of the password by a secret email (i.e., not by a group mail, but by an individual email.)

NOTE: If the voters are computer literate, the system can be configured to allow the voters to logon the online webpage and change the EC-provided password before they vote. The voter should remember the new password in order to log in the next time to vote.

During Voting (i.e., after the voting time begins):

The voting procedure includes the following five steps:

Step 1: The voter opens the voting website (whose address is announced one day before the voting time begins) in his/her computer. The website contains the voting guidance and shows the space where the voter has to type his/her username and password to logon the system. The place to enter the username and password would be displayed only during the voting time.

Step 2: The system validates the username and password. If the username or password is not valid, the system gives an error message and asks the voter to re-type his/her username and password. If the username and password are valid, the voter can click a button to proceed to Step 3.

Step 3: The system displays the candidate names. The voter votes by selecting candidates of his/her choice clicking on a radio button (for a single post) or a checkbox (for multiple posts) located before the name of the candidate. The voter click "Upload Your Votes" to move to Step 4.

Step 4: The system asks the voter to confirm the selection. The voter can also change his/her selection at this step. If the votes are correct, the system ask to click "Confirm Your Votes" to move to Step 5.

Step 5: The system saves the votes in the database and creates a PDF file containing a description of the votes. The voter can download and save the PDF file for record in his/her computer. The system thanks the voter for the successful completion of voting. The voter is logged out of the system.

The voter can then check his/her name in the list of persons who have already voted by clicking the link "Who have voted" on the left side of the page. So, all voters can check how many voters have casted their votes at any time.

After voting (i.e., voting time finishes):

Step 1. EC logons to the system through the secured administrative webpage and counts votes and declares the result.

Step 2. After the result declaration, the voters can check their votes by clicking "Check votes" link on the left side of the webpage. The voters secret IDs and votes are displayed. Since the voter's ID generated during the voting time is known to the voter only, no third person can know who has voted whom. At the same time, every voter can check if his/her vote is counted correctly. NOTE: "Check votes" link is activated only after the declaration of the results.