Previous Voting Systems and their Problem

Types of voting systems

Paper-based electronic voting system

Sometimes called a "document ballot voting system", paper-based voting systems originated as a system where votes are cast and counted by hand, using paper ballots. With the advent of electronic tabulation came systems where paper cards or sheets could be marked by hand, but counted electronically. These systems included punched card voting, marksense and later digital pen voting systems.

These systems can include a ballot marking device or electronic ballot marker that allows voters to make their selections using an electronic input device, usually a touch screen system similar to a DRE. Systems including a ballot marking device can incorporate different forms of assistive technology. In 2004, Open Voting Consortium demonstrated the 'Dechert Design', a General Public License open source paper ballot printing system with open source bar codes on each ballot.

Problem with paper-based system

Paper and Materials: Sealing envelopes and transporting election materials alone accounted for 40% of the cost of the 2012 French presidential and legislative elections. From ballot papers and information leaflets to electoral cards, each item must be printed and routed physically to voters or polling stations. These costs are further increased in the case of legislative elections, where there are more candidates requiring more materials to be produced. Colombia, for example, had to print 102 million ballot papers during its 2014 parliamentary elections, even though the country only had 32 million voters. This reliance on costly materials discourages administrations from considering alternative electoral procedures, such as proportional voting, which would require even more printed materials and create additional costs. The structure of an entire electoral system can be determined strictly by financial constraints.

Polling Stations: Establishing a network of polling stations across an entire nation can be both complex and exorbitantly expensive. Voting administrators must first find suitable locations within the community, which must be purchased or leased if they are not public property. These stations must then be furnished with equipment, including voting booths, ballot boxes and other administrative machinery. Voting equipment itself can be quite pricey too. For example, the optical analysis machine deployed at each central counting office in the United States runs between US$70,000 and $100,000.

Labor: From personnel manning polling stations to those in charge of mailing and registering voters, election administrators must hire and train many employees to assist them. The labor costs associated with administering an election are high and not reduced by economies of scale. In the 2017 UK general election, £22 million (15%) of the £140 million election budget was spent on employee engagement and training.

Direct-recording electronic (DRE) voting system

A direct-recording electronic (DRE) voting machine records votes by means of a ballot display provided with mechanical or electro-optical components that can be activated by the voter (typically buttons or a touchscreen); that processes data with computer software; and that records voting data and ballot images in memory components. After the election it produces a tabulation of the voting data stored in a removable memory component and as a printed copy. The system may also provide a means for transmitting individual ballots or vote totals to a central location for consolidating and reporting results from precincts at the central location. These systems use a precinct count method that tabulates ballots at the polling place. They typically tabulate ballots as they are cast and print the results after the close of polling.

Online voting systems and their problems

Due to the increase in technology, the use of voting systems is becoming popular by the minute. But this doesn't come without a cost. Most of the voting systems I found in my research have this one particular problem – SECURITY. They have been hacked and the number of votes has been manipulated. A few years ago a system created by the District of Columbia was hacked and the hacker altered every ballot on behalf of his/her own preferred candidate. So when build our system, we have to be cautious about security.

When we come to the individual systems, I found some problems with them as well. SurveyLegend is one of the top voting systems that I have found. It is platform-independent, mobile-friendly and has a secure voter authentication. But others like VoxVote and Election Runner don't even have a user authentication let alone a secure one. VoxVote is a free mobile voting platform with unlimited audience while Election Runner is a cloud-based voting solution that lets organization conduct 'secure' elections via tools such as graphical charts, data encryption & more. ezVote is a web-based election management, voting, and survey solution for businesses, clubs, and membership organizations. This is also one of the top voting systems with voter authentication, election management and candidate profiles. Another web-based voting software is OpaVote which supports regular check box and ranked-choice election voting

methods but it doesn’t have the ability to view candidate profiles and election management. eletionbuddy is cloud voting system that reduces time of election and supports ballot casting via email, social sharing or mail but it is one of the systems that doesn’t support election management.

From the above systems we can see that voter(user) authentication and security are the main issues in online voting systems. In order to solve these we need to have user authentication and make sure that a user can only vote once and build a more secure voting system.