

## VOTERS' POLL PRECINCT SEARCH

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### ABSTRACT

*One of the biggest problems during election day is the congestion of voters in the areas where names, precinct numbers, sequence numbers, and voting status were verified. This is caused by the lack of a fast and effective system for doing the task. Few elections passed, and the said processes are done in a manual process. Recently, the Commission on Election launched an online precinct search and verification system but, the system failed to perform according to what is needed because it collects many user data the query proceeds and is very dependent on an internet connection which made it less usable in areas with poor internet connection. The mentioned gaps made the researchers think about how to improve the current system and make it more usable particularly in areas with poor internet connection. Using the Agile:Scrum methodology of software engineering, the researchers interviewed the election officer assigned in the town of Candijay. According to the election officer, having a system that would be able to search names, precinct numbers, and sequence numbers and verify voting status that runs without depending on an internet connection is the best solution to fasten the process and lessen voter congestion. The Voter's Poll Precinct Search system has been developed based on the statements of the election officer and the current system. It is a localized system that runs on both web and mobile applications that searches voters' information and status using the smartphone that aims to fasten the process of finding voter poll precincts, sequence numbers, and voter verification. The researchers made the clientele answer the software usability questionnaire and received good feedback. Therefore, based on the data, the researchers concluded that the system successfully performed its designed task.*

*Keywords: Mobile Application, Web Application*

### INTRODUCTION

Election systems in the Philippines came a long way from several elections ago. The systems shifted from manual to automated systems which no doubt made the election system is fast and extra secure. However, some of the election-related problems still occurred like the problem in finding the election poll precincts of a specific voter because the voter's poll

precinct and the number of machines depend on the number of voters registered in certain voting precincts. The long queue in front of the voting precincts consumes much time of the voters that is supposedly spent in queuing for the voting turn.

According to Mr. Rolan Dominic J. Amora, the election officer for the towns of Candijay and Guindulman, It is a common issue every election that the area where the names with its precinct and sequence number will be filled with lots of voters

trying to find their names and verify if their precinct and sequence number is right. Additionally, he also said that sometimes if cannot be monitored, this causes a commotion among voters. Mr. Amora further stated that PPCRV volunteers reported hassle in verifying voters usually of the voter who can't find their names in the list. He finally added that maybe having a system that would be able to search names, precinct numbers, sequence numbers and verify voting status that runs without depending on an internet connection is the best solution to fasten the process and lessen voter congestion.

The commission on elections (COMELEC) has a similar web application to what Mr. Amora wanted to have but unfortunately, the said web applications needed to collect more information before the voters can search his/her poll precinct and verify his/her status. Also, the said system is very dependent on an internet connection. Therefore the system is not applicable in remote areas.

Existing applications mentioned the benefits of using information systems to solve existing problems. Springman S R. et al, 2011, Ng S M, et al., 2014 mentioned that having an information system could perform a fast retrieval of data. If data can be retrieved faster from the archive, the long queue of voters can be avoided or if not, lessen.

The problems encountered by Mr. Amora himself, the PPCRV volunteers, and the current system made the researchers decide to develop a computerized system Voter's Poll Precinct Search which is capable of searching voter details and status.

## OBJECTIVES OF THE STUDY

This study aims to develop a system that serves as a solution to the gaps encountered by election officers using the current system. Specifically, this sought to find the gaps in terms of 1) finding voters' poll precincts and sequence numbers in a faster manner; 2) verifying qualified voters based on an updated COMELEC official list; 3) avoiding long queues of voters in the polling precinct in observance.

## METHODOLOGY

This project used Agile: Scrum methodology of software engineering. It is a type of methodology that enables the researchers to deal with a task by breaking it into phases which includes consistent effort with project stakeholders and constant development and iteration in every phase. The phases of this methodology include stakeholder meetings, product backlogs, sprint planning, sprint backlogs, the actual project sprint, daily standup meetings, sprint review, and the potentially shippable product.

The team scheduled several meetings with the COMELEC election officer to collect his side of the story which will then become the basis of the system to be developed. All of the narrations given by the election officials were taken down as user stories. Each of the user stories was given schedules, submitted to the scrum master, and converted into project backlogs. The project backlogs made by the team will be reviewed by the scrum master and the election officer to make sure that the features of the project meet the requirements as a solution to the existing problems encountered during election day specifically in finding voter's poll precincts. Revisions were taken care of by the researchers and submitted again for checking.

When everything is set already, the tasks will be given a schedule using Gantt Chart, the tasks are scheduled and divided into specific workloads based on the number of persons in the team. One is in charge of the Software Requirements Specification (SRS), Hardware Development and Integration, and Software Development. The scrum master conducts daily scrum meetings to check if the project went as scheduled until the potentially shippable product is achieved.

## RESULTS AND DISCUSSION

The series of meetings with the election officer results in the following user stories. The table below shows the user stories gathered during the meeting with the election officer.

### 1. Gaps of the current system



**Table 1**  
*User Stories*

Story No.	User Story
1	Finding the poll precincts is veryhassle to the end of voters, especially for first-time voters and even voters that are not so familiar with the voting precincts
2	I want a system that could lessen long queues of persons looking for precinct and sequence numbers in observance to covid-19 protocols
3	I want a system that is completely portable
4	I want an easy to use system to deliver the whole process.
5	I want the system to be lessreliant to internet connection.
6	The list of voters must be from the current official list from the COMELEC.
7	Verify the qualified voters based on the updated printed COMELEC records is very hassle task. You need to scan all the pages in order to find the specific person.

The stories collected from the election officer both show the problems encountered in every election and the solutions that he wanted to have to, if not eliminate, lessen the problems encountered.

**2. Finding voters poll precincts and sequencenumbers in a faster manner**

Based on user story number 1, finding the pollprecincts is very hassle to the end voters specifically first-time voters. This also goes to the same problems in finding the voters' sequence number which is also necessary during election day. As also mentioned in table 1: story no 2, This problem may cause congestion in the area where the lists of poll precincts were posted which at the current time is very unnecessary because of the covid-19 threats.

**3. Verifying qualified voters based on an updated COMELEC official list**

For the election officer, the volunteers may find it a hassle to scan the pages of the paper just to get the records of a certain individual that may ask to verify his/her status. This usually occurs when a voter cannot find his/her name including the precinct and sequence numbers. Not only hassle, according to the election officers, this usually leads to the volunteers getting into trouble.

**4. Avoiding long queues of voters in the polling precinct in observance of covid-19 protocols**

**Table 2**  
*User Stories*

Priority No.	Story No.	Tasks/Modules/Solutions
1	1	<ul style="list-style-type: none"> <li>• Conceptualization of the web and mobile applications.</li> </ul>
	2	<ul style="list-style-type: none"> <li>• Creating system design.</li> </ul>
	3	<ul style="list-style-type: none"> <li>• Implementation of the system design using mock data.</li> </ul>
	4	<ul style="list-style-type: none"> <li>• Design and development of the mobile application that uses localized databases specific to polling places.</li> </ul>
	5	<ul style="list-style-type: none"> <li>• Development of the voter search module with full voter status results for the verification of its voting status.</li> </ul>
	7	
2	6	<ul style="list-style-type: none"> <li>• Sorting of updated COMELEC data.</li> <li>• Integrating the updated COMELEC data into the database.</li> <li>• Software testing.</li> <li>• Approval.</li> <li>• Deployment.</li> <li>• Maintenance.</li> </ul>

According to the election officer, until the date of the proposal, there are still no measures to be applied to avoid crowd congestion. To them, they only wanted to strictly implement the wearing of face masks. Not just as an observance of covid-19, the long queue of voters in finding poll precincts and sequence numbers may cause them too much time that is supposedly used for voting.

The gaps mentioned above were given a corresponding solution and priority number according to the urgency of their needs and termed as project backlog. Table 2 above shows the project backlog.

### 5. Voter’s Poll Precinct Search

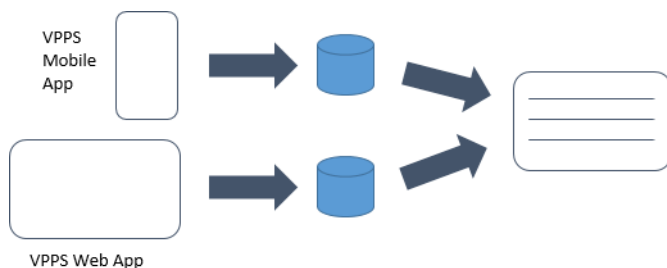


Figure 1. Voter’s Poll Precinct Search

After the series of steps done in the early stages, the researchers designed the Voter’s Poll Precinct Search Application. Figure 1 shows how the system works.

The above figure shows the mobile application and web portals. Portals send queries into the database and return a result. Sample results to be returned are the voter’s name, precinct number, sequence number, and the voter’s status. The system is not dependent on an internet connection because after the data fetched were placed in the cache memory. For the mobile app, a database specific to the voting poll precinct was designed. In this scenario, an internet connection is not needed because sql lite database is built-in into the app.

### CONCLUSIONS

The researchers made the clientele answer the standardized software usability (SUS) questionnaire during election day. The questionnaires were distributed to selected voters and volunteers who are willing to spare their precious time to give feedback to the system. Based on the SUS, majority of the respondents found the system very helpful, easy to use, easy to navigate, gave accurate data and made the processes faster. Therefore the researchers concluded that the system

successfully delivered its functionality according to its design.

### RECOMMENDATIONS

Technology innovations do not stop, it evolves now and then as well as the challenges in the real world scenario. Maybe this study cannot respond to new problems that were not measured ahead of time. Therefore it is recommended that further studies needs to be done for the system to sustain and be able to function more than its performance today.

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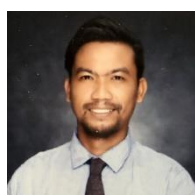
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