

Implementing and Overseeing
Electronic Voting and Counting Technologies

Case Study Report on the Philippines 2010 Elections

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CASE STUDY REPORT ON THE PHILIPPINES 2010 ELECTIONS⁵⁸



INTRODUCTION

IFES and NDI conducted case study research in the Philippines to examine the country's experience and lessons learned from the use of electronic counting technologies in its elections.⁵⁹ This study focuses primarily on the experiences and processes surrounding the Philippines' May 2010 elections, while the election commission went through the decision making process in moving to electronic technologies prior to 2010. The Philippines began the process of moving toward electronic technologies for elections in the 1990s. After a series of small pilots, electronic counting technology was introduced nationwide for the May 10, 2010 elections. This transition presented an enormous challenge to the country. Approximately 50 million registered voters

58 This case study focused on the transition to electronic counting and use these technologies in the 2010 elections. For this reason, and because it was conducted before the May 2013 elections, the study does not take into account the May 13, 2013 general elections, in which voters elected 12 senators (half of the Senate), all 229 district members of the House of Representatives and local and gubernatorial positions.

59 The case study combined desk research of primary source documents and reports with nearly 30 key informant interviews with 45 individuals in Manila from May 21-28, 2012. The interviewees included current and former representatives of electoral management bodies, advisory committees, government, political parties, former candidates, nonpartisan citizen election observation groups, information technology (IT) experts, polling firms and media.

spread over approximately 2,000 inhabited islands had the opportunity to participate in the polls. The elections involved more than 85,000 candidates for more than 17,000 national (President, Vice President, House of Representatives and Senate) and local positions. The lessons drawn from the 2010 experience not only inform future efforts in the Philippines, but are relevant for other countries considering or implementing electronic voting and counting technologies.

CHOOSING TO ADOPT ELECTRONIC TECHNOLOGIES

The transition to electronic technologies in the Philippines' elections was the product of a long and arduous process that started in 1992, but was not fully implemented until 2010. It began when the Commission on Elections (COMELEC)⁶⁰ adopted its strategic plan, which called for the modernization of the electoral process. Subsequent studies conducted by two international consultants gave further impetus to automate elections. The primary reason cited for moving to electronic technologies was to reduce the time for counting and tabulation. In previous elections, counting lasted as long as 18 hours in each polling station, and tabulation could take up to 40 days. This caused anxiety among the public and political contestants, increasing the risk of election-related violence and reducing confidence in the electoral process. Other reasons for the change were an intention to reduce fraud and errors in counting and canvassing results.

Within one year from the adoption of its strategic plan, the commission constituted a team to study available technologies, which at that time included optical mark recognition (OMR), punch card and direct recording electronic (DRE) systems. In 1995, the first election automation law was passed, authorizing the

⁶⁰ The COMELEC has authority over virtually every aspect of the electoral process, including creating procedures and regulations; administering all election laws and regulations; regulating campaign finance; registering parties and civil society organizations that seek to participate in elections; and managing the resources of all State institutions assisting in conducting elections.

COMELEC to conduct a nationwide demonstration of an electronic election system and to pilot-test it in the March 1996 regional elections in the Autonomous Region in Muslim Mindanao (ARMM). Following its perceived success, in 1977 Congress enacted the Election Modernization Act that mandated the COMELEC to use an automated election system (AES) for the process of voting, counting votes and canvassing/consolidating the results of the national and local elections.⁶¹

For various reasons ranging from late allotment of funds and time constraints, to the invalidation of contracts to supply the machines, the 1998, 2001, 2004 and 2007 national elections remained manual. The COMELEC, however, was able to automate the 2008 regional polls in the ARMM using DRE machines in some locations and OMR technology in others, for the purpose of determining the most suitable system for nationwide use in 2010.

BUILDING THE ELECTRONIC COUNTING SYSTEM

National Standards; Legal and Procedural Framework

The Election Modernization Act, which amends certain sections of the Philippines Omnibus Election Code, provides the legislative framework and standards for the use of an automated election system.⁶² The legislation was developed with input from relevant civil society organizations, including citizen election observation groups such as the National Citizens' Movement for Free Elections (NAMFREL), which was primarily gathered through technical working groups set up in the two legislative chambers. In practice, there were some elements of the law that were not consistent with the move to automation. However, most stakeholders noted that the law generally provided a solid legal foundation upon which to conduct automated elections.

⁶¹ Republic Act 8436, Election Modernization Act of 1997.

⁶² *Ibid.*

In preparation for the May 2010 elections, the COMELEC issued general instructions (GIs) for its precinct-level poll workers (Board of Election Inspectors, or BEI) on implementing voting and counting processes, as well as the transmission of results.⁶³ Other procedures, including rules of procedure for resolving disputes arising from automated elections,⁶⁴ were promulgated by the COMELEC.

In addition, several governmental bodies were established to provide advice, oversight and technical assistance to COMELEC throughout the development, preparation and conduct of electoral processes.

The COMELEC Advisory Council (CAC) – which consists of nine members from government, academia, the ICT field and civil society – was tasked with recommending the technology, identifying potential issues, participating in the procurement process and conducting an evaluation of the AES after its use. The Technical Evaluation Committee (TEC) – which consisted of leaders from government, industry and civil society – was established to certify categorically that the AES, including its hardware and software components, was operating properly, securely and accurately. Two legislative committees, the House Committee on Suffrage and Electoral Reforms and the Joint Congressional Oversight Committee on the Automated Election System, provided legal oversight for the electronic counting system. The Joint Congressional Oversight Committee is responsible for assessing strengths and weaknesses of electoral technologies and which electoral processes are suitable for such technologies.

Design Requirements and Selection of Technology

Five technologies were considered and evaluated for the nationwide automation of the 2010 general elections: DRE, the OMR-based precinct count optical scan (PCOS), central count optical scan (CCOS), open election system and

⁶³ COMELEC Resolution No. 8786

⁶⁴ COMELEC Resolution No. 8804 -In Re: COMELEC Rules of Procedure on Disputes In An Automated Election System in Connection with the May 10, 2010 Elections.

botong pinoy.⁶⁵ They were evaluated based on accuracy, speed, cost, security, transparency, proven technology, auditability, ballot security and as an end-to-end solution. The CAC advised the COMELEC to use either DRE or PCOS, subject to budget considerations, and CCOS technology for all areas not covered by DRE or PCOS technology.

Several civil society groups contended that more independent voices should have been involved in the decision, and that very few people making the decisions had enough familiarity with the technology. Representatives from the IT community on the CAC were not permitted to participate in developing recommendations on the selection of the technology, as it was seen by the COMELEC as a conflict of interest if they were to become bidders. Other IT experts outside the CAC tried to submit their recommendations, but the COMELEC instead encouraged them to submit bids during procurement.

Ultimately, the COMELEC chose PCOS in part to findings from the 2008 pilot of PCOS and DRE machines in the ARMM. Another consideration was cost, which also favored the use of PCOS over DRE machines. The electronic counting system that was implemented for the 2010 elections consisted of an election management system (EMS); PCOS system; and a consolidation/canvassing system (CCS), detailed as follows:

- The EMS is used to create all base components of an election definition. The application makes the needed associations of offices, candidates, parties and contests to create the election. The EMS outputs data files that are used to customize each CCS within the voting system, as well as creating output files that contain the data needed by the election event designer (EED) to create the election's ballot styles, compact flash-memory cards and iButtons with unique digital signatures used by poll workers to access the PCOS machines.

⁶⁵ OES and *botong pinoy* are locally-developed computerized voting systems.

- The PCOS is the ballot/vote counting device based on OMR technology. Each PCOS is supposed to be customized with a compact flash (memory) card and an iButton, so that only ballots specific to the particular polling place can be successfully scanned. Ballots are scanned through the PCOS, which reads the markings made by the voter onto the ballot and interprets the positions of the markings on the ballot. When the polls close, the PCOS prints reports indicating the number of votes for each candidate on the ballot and transmits the results to the appropriate municipal CCS.
- The CCS is the application that accumulates and tallies the vote data from the individual PCOS devices and generates results reports. The CCS is implemented at the municipal level, the provincial level, the national level and the central server level. At the municipal level, the CCS accumulates the votes and generates results for that level, then creates and transmits provincial and national level results to the provincial level CCS. At the provincial level, the CCS accumulates the votes and generates results for that level, then creates and transmits national results to the national level. At the central level server, the CCS receives all results from the different reporting levels.

Procurement Process

The COMELEC solicited bids for components of the AES, as well as the project management and electronic transmission of results. For developing the terms of reference (TOR) and request for proposals (RFP), the CAC members (with the exception of IT community representatives) submitted their final recommendations, which were incorporated into the final TOR/RFP. For the bidding and selection process, a Special Bids and Awards Committee (SBAC) was created. The CAC participated as nonvoting members of the SBAC, but representatives from the IT community were again not allowed to participate due to conflict of interest.

Seven technology providers/consortia submitted bids. All bidders were initially disqualified by the SBAC. The CAC and several other stakeholders interviewed believed ambiguities in the TOR and the strict interpretation of the RFP by the SBAC nearly caused the process to break down. After reevaluation, three bidders qualified for further evaluation of their proposals. Eventually, the only bid declared compliant with the technical and financial specifications was the joint venture Dutch/Venezuelan company Smartmatic, working in partnership with the Philippine company Total Information Management.

Immediately after the award of the contract, and while preparations were ongoing, cases were filed against the COMELEC and the vendor to enjoin them from implementing the automation project. Although the Supreme Court eventually ruled for the COMELEC, the latter's decision to wait for the court's decision even in the absence of a restraining order, caused a delay of two months, shortening the timeline for preparing for and administering elections.

While many praised the procurement process for its transparency, a number of observers reported shortcomings. Of the 16.5 billion PHP total cost of the 2010 elections, only 7.2 billion PHP were subjected to competitive bidding, while the remainder was procured through negotiated contracts that were less transparent. This included separate contracts issued to Smartmatic for ballot boxes and the transportation of ballots and PCOS machines to all polling centers. Additionally, CenPeg, the Legal Network for Truthful Elections (LENTE), The Carter Center and other election observation groups reported that, despite multiple requests, the COMELEC did not provide access to complete documentation of the contract between COMELEC and Smartmatic.⁶⁶ This impeded the ability of stakeholders to assess the contractual obligations between the two entities and whether these obligations were fulfilled, which was later the subject of a Supreme Court case filed by civil society groups.

⁶⁶ Namely, annexes specifying the list of goods and services to be provided by Smartmatic.

Production, Printing and Delivery

Printing of ballots was completed on time, but was an extremely rushed process. According to some interviewees, a two-month delay in the printing process occurred because the COMELEC extended the deadline for filing of certificates of candidacy, and printing could not commence before the deadline had passed. Others noted the vendor belatedly provided the necessary printers to complete the job on time. Due to the need to print ballots at a higher speed, the UV ink security feature was sacrificed to meet the deadline. Election observer groups and parties had the right to observe the printing process, and some took advantage of this right.

The vendor, Smartmatic, was able to deliver all the PCOS machines days before its deadline.

Certification, Source Code Review and Testing

The TEC was responsible for certifying the AES was operating properly, securely and accurately. Certification was to be done through an established international certification entity. SysTest Lab, a Colorado-based independent testing authority, was awarded the certification contract. SysTest audited the source codes of the following: PCOS firmware, election management system applications, CCS applications and other utilities. Because no independent observation groups or parties took part in a source code review, the certification became even more important. SysTest was unable to complete the certificate within the deadline prescribed by law. The certification was eventually issued two months before the elections. SysTest found the system was acceptable to conduct elections in the Philippines, but reported a number of deficiencies. While several election observation groups requested the certification review be made public, copies of the review were made public at a late date, and were released by senatorial candidate Joey de Venecia, not the COMELEC .

The law also mandates the COMELEC to promptly make the source code available and open to any interested political party or group to conduct its own review. The COMELEC, however, regulated access to the source code, citing security and intellectual property rights concerns. It provided a room within its headquarters with two computer terminals where interested parties could inspect the code on a read-only basis with the guidance of a Smartmatic technician. Those reviewing the source code would also need to sign a non-disclosure agreement. IT and civil society groups chose not to evaluate the source code, rejecting these limitations as too restrictive. They also noted the code was only made available in pieces. Political parties did not review the source code. Some parties acknowledged in retrospect that they did not grasp the importance of the review, and may not have had the capacity to review the source code effectively.

Due to the source code restrictions imposed by the COMELEC, a case was filed against it. The Supreme Court issued a ruling after the election directing the COMELEC to provide access to the petitioning civil society group, CenPeg. According to the Supreme Court, COMELEC “has offered no reason not to comply with this requirement of the law.” After years of court battles as well as negotiations between the COMELEC and Dominion Voting Systems, which owns the source code, the COMELEC offered the source code for public review on May 9, 2013, just four days before the May 13 general elections. Watchdog groups and some political parties commented that the source code release had come too late for a meaningful review.

Field tests were conducted about 3.5 months before the elections. Field testing was meant to identify and address problems relating to all aspects of the AES that included voting, transmission, counting and consolidation/canvassing. Further, the COMELEC staged mock elections wherein voters simulated the act of actual voting – verification, receipt of ballot, marking of ballot and scanning of ballot. The mock election used the final version of the election software to cover actual voting, counting, transmission of precinct results and consolidation

of results from all canvassing levels. Some partisan poll watchers and nonpartisan observers observed field testing and mock elections.

Security

In its bidding documents and in the contract signed with the COMELEC, Smartmatic claimed the AES was equipped with multiple security mechanisms that included ultraviolet (UV) ink to recognize the authenticity of ballots: security marks printed on them; the digital signature of the Board of Inspectors to authenticate election results at each precinct; bar codes; COMELEC markings; and unique precinct-based numbers on the ballots to authenticate ballots. An interviewee from the IT Department of the COMELEC also reported the data on PCOS machines were encrypted with 128-level of encryption. The encryption key is held both by the vendor and the COMELEC. At the same time, he noted there could be a very small possibility to intercept transmitted data.

While a range of security features were initially planned, several of these features were not implemented or did not function as planned. Several election observation groups and IT experts alleged the range of security vulnerabilities exposed the system to possible manipulation, fraud and failure. Before Election Day, it was discovered that the PCOS machines failed to read the UV security marks. To address the problem, the COMELEC decided to disable the UV ink detection function of the PCOS in favor of handheld UV lamps/readers.⁶⁷ However, the UV lamps were not used on Election Day, due to a range of reported reasons, including late delivery and a lack of any training for BEIs on how and why to use them.

Similarly, the plan to use digital signatures from three different poll workers to close the polls and canvass and transmit results for a precinct was not implemented. BEIs did not receive a digital signature of their own. Instead,

⁶⁷ COMELEC incurred additional cost of more than USD \$700,000 for purchasing 76,000 handheld UV readers.

the COMELEC decided to rely on the machine's own digital signature. Some groups, however, claimed investigations found PCOS machines did not have internal digital signatures. One interviewee pointed out that, in the absence of digital signatures, it would be difficult to identify and verify the source of transmitted results.

A console port at the back of the PCOS machines was also criticized by election observation groups, saying it was too easily accessible. The vendor claimed it was an output port, but IT experts said it could be used as an input port which, if connected to a gadget, would provide access to the machine and its operating system to someone intending to manipulate the results.

Recruitment and Training of Personnel

The transition to nationwide electronic counting technologies created the need for a range of new skill sets, which the COMELEC lacked at the start of the preparation. Its IT department was understaffed, while its field offices only had contractual IT workers that were assigned to help in voter registration. To address this problem, the vendor provided trainings to the IT Department, while basic trainings on the PCOS machines were given to a group of personnel who served as trainers of the poll workers.

The poll workers are ad hoc election workers, consisting mostly of public school teachers tasked by law to assist the voting process during elections.⁶⁸ The amended election automation law requires at least one of the three members of the BEI to be an IT-capable person, as certified by the Department of Science and Technology (DOST).⁶⁹ Interviews with COMELEC staff, however, revealed lessons learned from the training process. There were not enough PCOS machines for use during the trainings, so many trainings were conduct-

⁶⁸ The BEI is composed of chairman, poll clerk, and a third member, each having a vital role in the election proceedings.

⁶⁹ A BEI receives his/her certification after successfully passing the written and practical exams given by the DOST.

ed without hands-on exercises. Trainings and accompanying materials, such as manuals, were delayed due to significant postponements in finalizing general instructions for conducting elections. Training focused heavily – almost exclusively – on the new technology and operating the PCOS machines. BEIs were not trained on how to conduct the electoral process more broadly, such as managing voter flow and authenticating voters. As discussed, this led to disorganization and inefficient processing of voters on Election Day, which contributed to long lines. In addition, several election officers interviewed recommended that future BEI trainings last longer than one day.

The vendor recruited, trained and provided approximately 45,000 PCOS technicians that were deployed in all precincts to assist the BEIs and address problems that might emerge. Most of the election officers that were interviewed, however, criticized technicians for being ineffective.

IMPLEMENTING E-COUNTING

Project and Risk Management

The COMELEC created a project management office (PMO) to manage the implementation of the different components of the AES. It included heads of different departments in the commission, including operations, administrative, human resources, legal, IT and voter education and planning, among others. The Executive Director headed the office.⁷⁰ However, there was no concerted attempt to either define its structure or clarify its duties vis-à-vis the organizational set up and regular functions of the commission. While experienced in managing manual elections, members of the PMO lacked experience managing elections involving electronic technologies and could not anticipate the enormous challenges involved in such a task. The PMO did not establish regular meetings; formal reporting and communication process; or project controls, as it was more involved with day-to-day troubleshooting rather than quality

⁷⁰ COMELEC M.R. No. 09-0612.

control and risk management. Although the PMO developed a project management plan and timeline, it was not able to follow it, with deadlines adjusted as original targets were missed. Because of inefficiencies in the way the preparation was managed, the overall cost of the May 2010 national and local elections ballooned to PHP 16.5 billion from the allotted budget of PHP 11.3 billion.

Current and former election officials, parties, IT experts and civil society groups expressed concern that the COMELEC was unable to manage and oversee the vendor, Smartmatic, effectively. Several reasons have been cited, including the relative lack of IT expertise among the COMELEC and the shortened time frame, which required quick decisions and actions by Smartmatic, sometimes without following proper lines of authority.

Voter Education and Public Relations

The COMELEC conducted a nationwide voter education campaign to inform the public about the new technology to help them become comfortable with it and instruct voters how to properly fill out the ballot. The campaign included broadcast and print media, instructional videos, billboards, flyers and a road show to demonstrate the PCOS machines and have people practice on it. Smartmatic provided voter education materials to the COMELEC, and COMELEC adapted these materials, as needed.

The COMELEC's voter education campaign was able to inform a significant percentage of voters. Public opinion research conducted by Social Weather Stations indicated an increase from a baseline October 2009 figure of 38 percent of voters who had either very much or substantial access to information about the new electronic system, to 67 percent just before the May 2010 elections. Given the limitations in resources and staffing, this is a significant achievement. There were also several areas for improvement that COMELEC staff, public opinion research and civil society cited. Most notably, voter education was not conducted in a strategic way and was not informed by public opin-

ion research. As a result, the campaign did not sufficiently target those most in need of information and hardest to reach. Research during the elections showed that those with insufficient information were primarily elderly, rural and less-educated voters. In addition, some observers noted the campaign almost exclusively focused on the new technology at the expense of providing other important voter information.

The COMELEC also put a great deal of emphasis on public relations. Before elections, the public's opinion of the COMELEC was very low. The COMELEC sought to improve this by being proactive and more open about emerging problems. Its policy was to work on a three-hour deadline to publicly address any problems and criticisms raised by others. COMELEC officials sought to build relations with key journalists, and staff attempted to answer all calls from the media. These public relations efforts contributed to a dramatic increase (approximately 30 percentage points) in public confidence in the COMELEC from before to after the elections.

Equipment Delivery

Smartmatic was responsible for and had custody of the PCOS machines and accessories during their transport from the central warehouse to the hubs and polling centers. The delivery of PCOS machines and accessories was a tremendous challenge, given the short timeframe and geography of the Philippines. Smartmatic contracted three logistics forwarders to deliver equipment to the polling stations. Election observer groups criticized this bidding process for a lack of transparency, calling into question the “small size and limited access to networks” of the three companies, none of whom were in the top 10 in market share of freight shipping (by weight).⁷¹

The majority of the machines were delivered in the last few days before the elections, with some arriving on Election Day and a small number arriving after.

⁷¹ Final CenPeg Report, Project 30-30.

Custody over the machines shifted to the relevant election officer when the PCOS machines and accessories were given to the BEIs. The guidelines further stated that in no case shall these machines and accessories be left in the polling places without any security. After the elections, BEIs were directed to give the PCOS machines to the technicians of the vendor, which shifted back the custody over the PCOS machines to the vendor. Regional election directors of the COMELEC indicated that this undermined their ability to supervise election preparations. They noted, for example, that they needed to secure the vendor's approval to obtain backup PCOS machines and batteries in precincts that needed them.

Software/Hardware Maintenance and Storage

Instead of an outright purchase, the COMELEC entered into a lease agreement with the vendor for the lease of the PCOS machines used in the 2010 elections, with an option to purchase. Of these, the commission initially bought only 920 units for electoral protest cases. For the remaining machines, the vendor assumed the task of storing and maintaining the machines after the elections. In March 2012, the COMELEC formally decided to exercise its option to purchase all remaining PCOS machines. In 2012, the COMELEC exercised its option to purchase the remaining machines.⁷² The Supreme Court eventually upheld the COMELEC on its position that it can exercise its option to purchase the remaining PCOS machines.

Final Sealing and Testing

A final sealing and testing was undertaken seven days before the election, when all PCOS machines had been deployed. During the sealing and testing, the COMELEC and the vendor discovered a problem with the compact flash card caused by the late modification in the ballot design without a corresponding reconfiguration of the software on the compact flash cards. As a result,

⁷² Election observation groups filed four different petitions challenging the COMELEC's decision to purchase the PCOS machines. However, the Supreme Court eventually upheld the COMELEC's decision.

the PCOS machines did not read the ballots properly. This caused a great deal of public uncertainty and calls to postpone the elections. The vendor and COMELEC had to take extraordinary measures to retrieve and replace some 76,000 compact flash cards with newly-configured cards just days before the elections.

After the arrival of the new, compact flash cards, testing and sealing were conducted in some polling stations. Most procedures occurred within two days of the elections. Election observer groups and some COMELEC officials interviewed noted there were a number of polling stations in which testing and sealing did not occur at all. In addition, the confusion and rush surrounding flash card replacement undermined chain-of-custody security procedures, which some pointed to as providing opportunities for tampering with the flash cards.

Election Day – Set-up, Security, Voting Process, Troubleshooting

The general instructions contain specific instructions for BEIs on: preparation for voting; manner of obtaining ballots; manner of voting; procedure in case of shortage of ballots; procedure in case of rejection of ballots by the PCOS machine; procedure for disposing unused ballots; procedure for the counting of ballots and transmission of results; the disposition of election returns; shutting down of the PCOS machine; and the disposal of PCOS, ballot boxes, keys, election returns and other documents.⁷³ The COMELEC, however, was criticized for its failure to finalize and distribute the general instructions much earlier.

To ensure integrity of the machine and the system, the general instructions outline steps for BEIs to follow before voting starts. These include initializing the automatic printing of a report showing zero votes for each candidate and including geographic information of the precinct.

⁷³ Resolution No. 8786, Revised General Instructions for the BEIs on the Voting, Counting, and Transmission of Results in Connection with the 10 May 2010, National and Local Elections.

For the voting process, after authentication, voters were issued a secrecy folder and paper ballot, upon which they used a pen to shade an oval to mark each of their choices. After completing the ballot, the voter inserted it into the feeder slot of the PCOS machine. If the PCOS accepted the ballot, the machine display flashed a confirmation message. Upon acceptance, the PCOS scanned the ballot and saved the image as a TIFF file in the compact flash card, along with data on how the PCOS read the ballot choices. The paper ballot dropped into a secure box under the scanner. After casting their ballots, voters returned to the BEI to have their finger marked with indelible ink (although observers noted that in many polling stations, voters were instead marked when they were handed their ballots).

The PCOS machines returned a ballot out of the feeder slot if: the marks printed along the ballot did not match the assigned precinct; the ballot had already been accepted or rejected; or there were ambiguous marks. Voters had three more opportunities to correct and re-feed the ballot. After four total feeds, the ballot would be considered rejected, and the voter had to return the ballot to the BEI. Observers found that in most instances, ballots were accepted on the initial try.

The issue of whether the AES provided a sufficient voter verified audit trail (VVAT) was debated. COMELEC officials contended that the ballot itself provided sufficient verification to the voter. However, several election observation groups and IT experts pointed out that voters were not able to verify how the PCOS machine interpreted their votes, which was the data transmitted as the official election results.

Nearly 40 percent of BEIs surveyed in a Social Weather Stations survey had problems operating the machines; although, in most cases, the problems were not severe, and were eventually addressed. The most common problem reported was paper jamming during printing. Other problems reported during

Election Day were inadequate real-time technical support for problems, such as running out of thermal paper; missing or drained batteries; and data transmission problems.

To assist the BEIs, PCOS technicians were provided by the vendor, which claimed that over 48,000 technicians were recruited, trained and deployed for on-site support before and during Election Day. Call center agents were also mobilized during Election Day for monitoring the entire process and for remote support to field technicians. Election officers interviewed, however, complained that most of the PCOS technicians did not have the technical skills to assist them. Election observation groups and some IT experts interviewed also expressed strong concerns about the full level of access that the vendor-provided technicians had to the PCOS machines, particularly since most BEIs were completely reliant on technicians to resolve issues with the machines.

One of the most significant problems on Election Day was long lines in the precincts.⁷⁴ This may have led to disenfranchisement of voters who could not or decided not to wait in a long line. The lines were primarily caused by the need to cluster precincts (i.e., the 250,000 precincts in 2007 were reduced to 80,000 precincts in 2010), wherein the number of voters per precinct was increased from 200 to a maximum of 1,000. The need to cluster precincts arose because the budget for the elections only provided for leasing approximately 80,000 PCOS machines. The long lines were compounded by the fact that the COMELEC did not increase the number of BEIs to handle the increase in number of voters per location, and the lack of training for BEIs on how to run the voting process efficiently.

⁷⁴ In a Social Weather Stations opinion poll, 71 percent of voters reported "very long lines" on Election Day.

Nonpartisan Domestic Election Observers

COMELEC accredits one or more groups as “citizens’ arms” for each election period. These groups are supposed to serve as civil society observers and simultaneously play a number of supportive roles throughout the electoral process. They also receive certain rights that give them greater access to observe aspects of the process that unaccredited groups do not receive, such as access to the central server that receives the transmitted precinct-level election results and receipt of paper copies of election results in the precincts.

For the 2010 elections, a limited number of civil society groups sought official accreditation as citizens’ arms. Controversially, there was only one group accredited – the Parish Pastoral Council for Responsible Voting (PPCRV), which received funding from the COMELEC to conduct voter education, election observation; staff voter education desks; participate in the Special Bids and Awards Committee; and organize the random manual audit.

Many independent civil society groups questioned whether the PPCRV was able to independently monitor the elections, given its dependence on the COMELEC for funding and its dual role to support the electoral management process and simultaneously monitor the process. Several groups conducted observation without accreditation, either because they were denied accreditation or chose not to seek accreditation due to concerns that becoming citizens’ arms could undermine their independence. These groups included:

- Procurement: Transparency and Accountability Network
- Technological preparations: Halalang Marangal
- Campaign finance: Pera’t Pulitika and Philippines Center for Investigative Journalism
- Overall election preparations and conduct: Bantay Eleksyon, a coalition

- of 47 organizations formed by the Consortium on Electoral Reforms
- Overall election preparations and conduct, with a focus on technology: Center for People Power in Governance (CenPEG), as part of the “30-30 Vulnerabilities and Safeguards” project (Project 30-30), which involved consultants and scholars covering computer science; programming and security; mathematics; and law. CenPeg also involved 12 regional coordinators and thousands of poll watchers from at least 50 provinces. CenPeg also conducted a post-election assessment in nine cities and provinces to verify incident reports.
 - Polling and canvassing processes: NAMFREL and Consortium on Electoral Reforms (CER); both attempted to obtain election results from precincts and compare them to officially-reported results in thousands of precincts.
 - Electoral violence: Vote Peace and National Task Force HOPE
 - Legal monitoring and electoral disputes: LENTE and Libertas
 - International observation: The Carter Center conducted a limited election observation mission from March through June 2010. It did not issue public statements during the election period, but did issue a final report following the elections.⁷⁵ NDI organized an international pre-election delegation, which issued a report on March 13, 2010.⁷⁶

Groups that attempted to observe elections on Election Day reported that they faced significant problems gaining access to polling stations, observing the transmission and obtaining copies of election results. This caused serious concern among observers, who contended that no independent group was able to genuinely observe Election Day conduct.

Given the challenges involved in observing the move to electronic technologies, greater capacity building and coordination among the groups would have

⁷⁵ http://www.cartercenter.org/resources/pdfs/news/peace_publications/election_reports/philippines-may%202010-elections-finalrpt.pdf.

⁷⁶ http://www.ndi.org/files/Statement_of_Pre-Election_Delegaton_to_the_Philippines.pdf

produced a more effective observation of the 2010 elections. In particular, IT groups and traditional election observation groups did not coordinate their resources well enough to take advantage of each other's strengths, knowledge and networks. Citizen observation groups, particularly those who lacked IT capacity prior to 2009, did not sufficiently refine their monitoring methodologies to take into account the new technologies of the 2010 elections. In many cases, they did not have the specific expertise to anticipate where problems could occur. Without official access to many aspects of the process, the groups often had to rely on access to contacts and relationships to gain access to information on COMELEC decisions and processes (insider information), rather than formal opportunities to observe such processes. Finally, several groups noted they should have better trained observers on understanding the new technology and its vulnerabilities.

Partisan Poll Watchers

Most major political parties and candidates organized partisan poll watchers to deploy to polling stations on Election Day. Parties in the Philippines have done this for many years under the manual election system, so the switch to electronic counting technologies presented a challenge. As in previous elections, parties and candidates tended to field poll watchers in locations and regions where they had a stronger ground presence and where they were most concerned about fraud. Some larger parties, such as the Liberal Party, educated campaign managers, candidates, lawyers, branch offices and poll watchers on the new technology, and how the PSCOs machines worked. However, since the general instructions were issued very late, it was difficult for parties to effectively train their poll watchers on how to monitor Election Day procedures. In particular, they recognize they did not adapt their trainings enough to take into account the new technology, where the vulnerabilities were and how to collect credible evidence in case of fraud or manipulation against their candidate/party.

Transmission and Tabulation

Data from the PCOS machines were electronically transmitted to the municipal, national and central consolidation centers immediately after closure of the polls using two transmission methods: cellular transmission through general packet radio service on the global system for mobile communications (GSM); and satellite transmission through Broadband Global Area Network (BGAN). Although the transmission was, in general, fast and efficient, there were reports of transmission failures or the inability of the consolidation centers to receive data. Approximately 85 percent of results were transmitted with direct electronic transmission, and 15 percent through physical delivery of compact flash cards to the municipal level.

Difficulties also emerged because of the COMELEC's prescription that the electronic transmission of results must follow the reporting hierarchy used in manual elections. This system requires that data must be reported from precinct to municipality to province to the central server. Assessments of the AES noted that this system should have been abandoned, particularly since data communications at the main/central canvassing center were more reliable than those in municipalities and provinces. It would have been more cost effective and efficient to transmit results data directly to a central server.

To monitor the transmission process, several election observation groups had planned to collect precinct-level election results and compare them to the precinct-level results posted on the COMELEC's website, which was required by law. This included the accredited PPCRV, and unaccredited efforts, such as the Bantay ng Bayan network, which included NAMFREL and Bantay Eleksyon of the Consortium on Electoral Reforms. Both mobilized thousands of observers on Election Day to collect precinct-level results. However, the comparison of results for a sizeable portion of precincts was not possible, in part because of a number of cases in which BEIs refused to provide observers – even PPCRV's accredited observers – with a copy of the election results. Unaccred-

ited observers had an even more difficult time entering polling stations and obtaining copies of election results. Further, in some precincts, the BEIs closed the PSCOS machines after transmitting results without printing copies of the election results for distribution. Most observer groups attributed these problems to a lack of training among BEIs about the rights of observer access to election results.

After several days, PPCRV was able to gather printed results from many precincts and compare them to results received by the national canvassing server that received results on Election Day. Of the precincts evaluated by PPCRV (which was not a random representative sample), approximately 0.06 percent of results showed discrepancies when compared to the central server:

The law requires that precinct-level election results be posted publicly on COMELEC's website. However, on election night, the public posting of transmission results stopped after approximately 90 percent of the results had been posted. Thus, no results were publicly released for approximately 7,500 PCOS machines. The data was soon taken down by the COMELEC. Before it was taken down, a group of IT experts created a mirror image of the site for data analysis.⁷⁷ They found a number of anomalies and missing data. For example, among precincts that did have data, nearly 40 percent had missing data in one or more candidate positions. COMELEC has never explained why full, precinct-level results were not released publicly, nor has it explained the apparent data errors on the website.⁷⁸ This has raised serious concerns among some political contestants and civil society members.

77 Mirror website with election data: http://curry.ateneo.net/~ambo/ph2010/electionresults/res_reg0.html

78 COMELEC and Smartmatic representatives interviewed who had access to the three main servers reported that the data was complete on the main servers, but no one could provide a reason why the data was never posted on the website.

POST-ELECTION PROCESSES

Post-election Audits

There are two methods through which audits were supposed to have been conducted. However, both methods were not implemented sufficiently to allow for a credible check on the publicly-reported voting results. The first was through public posting of precinct-level results on the COMELEC's website, which was not implemented, as explained in the Transmission and Tabulation section.

The second was through a random manual audit (RMA), which by law was required to be conducted in five randomly-selected precincts per congressional district (a total of 1,145 precincts) after the closure of the voting process. The Random Manual Audit Committee, which included members of PPCRV, was responsible for conducting the RMA. In the pre-election period, election observation groups pressed PPCRV and COMELEC to prepare for the RMA early, and provided COMELEC with RMA guidelines prepared by the Management Association of the Philippines. However, COMELEC staff and PPCRV representatives acknowledge that appropriate advance preparations were not made.

The RMA sample drawing was conducted transparently on Election Day in front of the media. However, the sample was not representative, as precincts in difficult-to-reach communities (the least accessible barangays) were excluded from the sample. Many BEIs were not informed they were selected for the RMA until late in the day, in some cases, after the precincts had already moved the ballots to higher-level tabulation centers. BEIs were not well-informed on RMA procedures. The RMA was not completed until more than two months after Election Day. Further, independent observers were not able to monitor the process in most locations. NAMFREL observers noted that in many of the locations it attempted to observe the RMA, no parties or PPCRV representatives were present.

When finally completed, the RMA demonstrated a 99.6 percent accuracy

rating of the election results. This fell below the COMELEC's requirement of 99.995 percent accuracy in the RFP for the automated system. This result is subject to questions, given the delayed process, bias in the sample, lack of independent observation and inconsistent implementation.

Challenges and Recounts

Electoral dispute resolution in the Philippines is handled by several different adjudicative bodies, depending on the type of dispute and the type of election. Prior to the May 2010 elections, expectations were that the move to electronic counting technology would reduce the number of electoral complaints filed. However, the opposite occurred. The House of Representatives Electoral Tribunal received a record number of cases, 65, in 2010 – a significant increase from the 35 filed in 2007. The COMELEC also received more cases filed by losing candidates, 98, in 2010 – compared to 73 in the 2007 elections.⁷⁹ Some election protests were related to the behavior of candidates, election officials and others, while a portion of the protests were related to the electronic technology used in the elections. Some of the most common technology-related protests were: erroneous counting of votes or misreading of ballots by the PCOS machines; errors in the initialization of PCOS machines; errors in transmission and consolidation of results; erroneous rejection of ballots; non-implementation of security measures; and manipulation of PCOS machines and/or compact flash cards.

In the case of recounts, paper ballots are to be used. Scanned images of the ballots (scanned on Election Day) are only to be used in cases where the integrity of the ballot box has been compromised. This was a hotly-debated issue. One point of controversy was that, unless there was evidence that ballot box integrity was compromised, scanned images could not be used in cases where there was a significant difference between the physical count of the ballots (excluding rejected ballots) and the number of votes cast as reported in the official election results.

⁷⁹ Issues and Challenges to Dispute Resolution under the PSCOS AES, Libertas.

Some party representatives and candidates interviewed noted the courts did not have the IT capacity to effectively rule on technology-related cases. Others noted the full cost of protests increased as a result of the move to electronic technology, since they have to hire more specialized legal and IT expertise; they need to educate themselves in more detail about the technology; and collecting evidence is more difficult under an electronic system.

Evaluation of the System

Several post-election assessments of the AES were conducted by the COMELEC and other stakeholders, including one conducted by IFES for the commission, which involved the commissioners, senior staff, regional directors, election officers and representatives of civil society and political parties. Additionally, the CAC submitted a comprehensive report on the implementation of the AES to the COMELEC, which contained an evaluation and recommendations for improvement. Several civil society organizations also evaluated the AES. Many of these evaluations were presented in final reports, public forums and discussions. In addition, a local survey group, the Social Weather Stations, conducted a survey after the 2010 elections. Approximately 75 percent of respondents rated the results of the May 10 elections to be “satisfactory,” a marked improvement compared to the 2004 and 2007 elections, which registered a satisfactory ratings of only 53 percent and 51 percent, respectively.⁸⁰

Media Coverage

Media coverage surrounding the elections focused primarily on the electoral races and results, not as much on the new technology. Journalists and editors interviewed noted the main coverage of the technology focused on a few major problems before Election Day, such as the replacement of compact flash cards, and on the speed with which preliminary results were announced in comparison to past elections. Generally, the media did not cover electoral protests, with the exception of the protest filed by vice presidential candidate

⁸⁰ People’s Evaluation of the May 2010 Automated Elections, SWS (10 July 2010).

Manuel “Mar” Roxas III. In interviews, several journalists attributed some of this lack of coverage to the difficulty in discerning whether the claims were credible or not, because editors and journalists were not familiar enough with the technology. Some media organizations had in-house workshops on the AES system, and some civil society groups engaged with media to educate them on the technology or express their concerns. However, media organizations and staff mentioned they were often confused about the technology and felt ill-equipped to report on it.

LESSONS LEARNED

Legality

- The transition from manual to automated elections is a long process. The legality of electronic technologies in the Philippines’ elections was addressed over several years and through a structured, mostly-inclusive process. While there were some legal provisions criticized as inconsistent with automated elections or too ambiguous, most stakeholders agreed there is a solid legal foundation upon which to conduct automated elections.
- The Philippines’ experience shows the benefits of conducting a careful, thorough revision of legislation well in advance of a nationwide transition to electronic technologies.

Accountability

- In-house capability is crucial for ensuring accountability of the exercise. The COMELEC faced an enormous challenge to remain in control of the relationship with the vendor, Smartmatic, particularly as Election Day approached and urgent problems arose. This was due in part to the COMELEC staff not yet building the in-house capacity to manage the vendor.

- The accountability of the whole automation process could have been enhanced significantly, had the COMELEC properly implemented post-audit mechanisms. The Philippines planned on two different methods for auditing results – a random manual audit and the public posting of precinct-level results on the COMELEC’s website. However, both methods were not implemented sufficiently to allow for a credible check on official election results.
- IT groups and election observation groups did not coordinate well enough to take advantage of each other’s comparative strengths, knowledge and networks. Better coordination and cooperation among civil society actors could have helped pair IT expertise with election monitoring experience and methodologies to more effective election observation efforts.
- Oversight actors in the Philippines, including advisory bodies, media, parties and civil society, could have better trained core staff, coordinators and observers on understanding how to effectively observe based on the new technologies. They should have also better assessed and adapted their monitoring methodologies to take into account any new technologies used in elections.

Security and Secrecy

- Ensuring the security of electoral processes was a significant challenge during the transition to automated elections. While a range of security features were initially planned, several of these features were not implemented or did not function as planned. Several election observation groups and IT experts alleged that the range of security vulnerabilities exposed the system to possible manipulation, fraud and failure. In most cases, failure to implement planned security features was attributed to a lack of sufficient time.

- Secrecy of the ballot, with respect to the PCOS machines, was not raised as a concern during the 2010 elections. Some critics argued voters should have been able to confirm how the machine recorded their votes by having the machine briefly flash on its screen the voters' choices as recorded, but others contended it could have compromised secrecy.

Transparency

- While the COMELEC appeared to make a genuine attempt to be transparent during some parts of the electoral process, this was not always sufficient to meet international best practice and to gain the trust and confidence of key stakeholders. In some cases, transparency was sacrificed for expediency. In other cases, critics allege that transparency was restricted because of sensitivity to criticism during what was a very challenging transition to automated elections nationwide.
- Most glaringly, independent observers did not have official, accredited access to any part of the process. Only one group, the PPCRV, was accredited, and most believe its independence was questionable. As a result, independent observers often had to rely on informal contacts and relationships or court appeals to gain access to information on COMELEC decisions and processes, rather than formal opportunities to observe such processes. In many instances, by the time observer groups obtained the information or documents they sought out, it was too late.

Sustainability

- Cost considerations are a major challenge for ensuring sustainability of automated elections. Despite extensive consideration of the full costs of moving toward automation, some challenges did emerge. With the budget allotted, the COMELEC could not lease enough machines to maintain even a fraction of the number of precincts in previous elections. This led to the need to cluster precincts, which was cited as a major cause of the long lines on Election Day.

- Several people interviewed emphasized how much more complex and challenging the automated elections were to conduct compared to manual elections. They noted that electronic technologies should not be seen as a way to address capacity shortcomings in managing elections – they may magnify those shortcomings. The 2010 experience showed the challenges of implementing electronic technologies without having enough leadership and staff with IT expertise and experience, as well as a high degree of project management capacity.

Inclusiveness

- Early engagement is critical for building trust among stakeholders. During the consideration of different technologies and, later, the procurement process, an antagonistic relationship developed between the COMELEC and some civil society and IT groups who felt they were excluded from the process.
- Several interviewees noted that, at times, inclusiveness was sacrificed, at least in part due to the shortened timeframe for implementing the 2010 elections.
- The 2010 voter education efforts were able to inform a significant percentage of voters, which was a notable accomplishment. However, it was not conducted in a strategic, research-informed way, which meant those most in need of information and hardest to reach often did not receive sufficient information.

Trust

- The COMELEC faced a significant challenge in building trust in the election processes. Following the elections, however, overall trust and satisfaction with the elections increased significantly. Many attributed this boost in trust as a result of the speediness of the results and the absence

of reported widespread Election Day failures. The fact that more than 90 percent of precinct results were reported on election night was viewed as a significant achievement, and the presidential election results reflected the exit polls almost exactly. These factors helped bolster voter trust and mitigated the potential for post-election violence.

- However, the lack of transparency of certain aspects of the process reduced trust among election observation groups and IT experts, as well as some parties and candidates.
- Several interviewees noted the increased trust in 2010 was partially due to the novelty and pride associated with the Philippines conducting the first nationwide automated elections and the wide margin of victory in the presidential race, which mitigated potential complaints. They cautioned that this trust may not be sustained unless significant efforts are made to address problems and security vulnerabilities before the next major elections in 2013.