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Center for People Empowerment in Governance

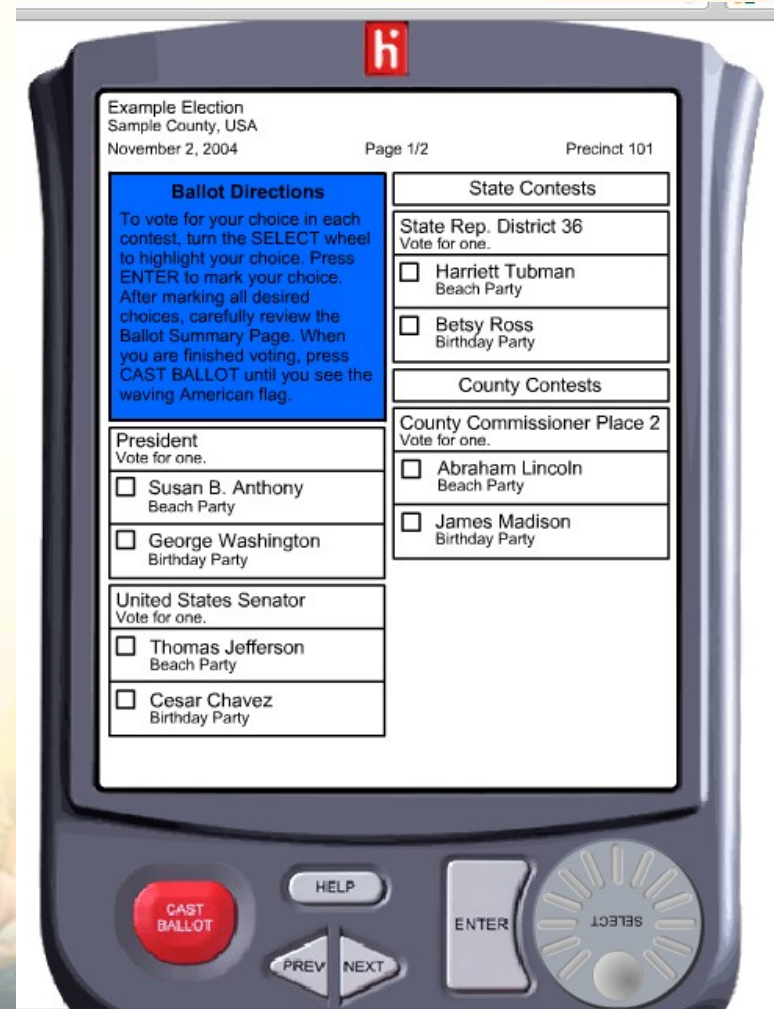
Criticalness of Transparency in Automated Elections

Talk #2 in the Panel:
Modernizing Democracy:
The Philippine Experience



Voting Machines 1 (DRE)

- Digital Recording Electronics (DRE)
 - voter makes selections on touch screen;
 - votes automatically counted by computer;
 - voter gets paper receipt;



Voting Machines 2 (OMR)

- Voter manually shades paper ballot
(or voter makes selections on touch screen, and computer prints paper ballot with voter selections)
- Paper ballot can be used for post-election audit



Voting Machines 2 (OMR)

- Voter feeds paper ballot to PCOS-OMR or CCOS-OMR



For 2010 Comelec Chose Smartmatic PCOS-OMR

- Preprinted ballots with 300 candidates names with ovals
- Voter shades ovals of their chosen candidates, using felt-tip pen
- Voter feeds accomplished ballots into PCOS machine, which assigns votes to candidates, and accumulates votes
- PCOS transmits totals to canvassing centers
- CCS computers at canvassing center consolidates votes and prints winners of local election contest.



Extent of 2010 Election

- 85,000 candidates vying for 17,000 positions
- 50,000,000+ voters
- 1,600 different local elections, each with its own list of candidates: 1,600 different ballot designs
- 76,000+ PCOS-OMR computers used at the voting precincts



Definition of Transparency in Government

- **Disclosure** - Providing information about an issue, event, project, policy, program etc
- **Access** - providing a reasonable way for people to find and view that information
- **Discussion** - about the process enables citizens to collaborate about the content that is being presented to them and what it means.



Importance of Transparency

- Constitutional right of the people to know (Art III Sec 7)
- For accountability of government officials and employees



Transparency in Elections

- Specified in Omnibus Election Code (BP-881)
 1. Precincts & polling places (XIII): voting booth, ballot boxes, tally board
 2. Watchers (XV)
 3. Casting of votes (XVII)
 4. Counting of votes (XVIII)
 5. Canvass & proclamation (XIX)



Why Transparency in Automated Elections?

- Vote scanning, vote counting, and canvassing machines do not scan, count, and canvass in public; nobody knows how they work to scan, count, and consolidate our votes. They just work fast, but internal workings of their hardware (computer) and software (computer programs) are not known.



How to Make Automated Elections Transparent

1. Voter education
2. Source code (computer program) review and modification for correctness
3. Design of Input Data
4. Transmission Design
5. Voter verification of his/her choices



Making Transparent ...

6. Security & authenticity of ER, COC, SOV by digital signing by BEI and BOC

7. Transparency in Canvassing

8. Publication of verifiably correct original election documents (ER, SOV, COC) in readily accessible public access websites.

9. Making accessible other vital election-related documents.



Voter Education

- Not only on how to vote in an automated election
- Also candidate and party stand on important issues



Source Code Review

- “Once an AES technology is selected for implementation, the Commission shall promptly make the source code of that technology available and open to any interested political party or groups which may conduct their own review thereof.” (RA9369 Sec 12)



Importance of Source Code Review

- To convince the IT community and the general public that the computer programs to be used will *do the job correctly* (scanning of votes, assigning votes to candidates, counting, canvassing, transmission, and consolidating).
- To ensure that security holes have been fixed
- To propose bug fixes, since no computer program is ever bug free



Design of Input Data

- Names and row-column positions of 300 candidates on ballot must be supplied to the PCOS on CF-cards.
- A redesigned ballot with no new CF-card data will result in vote-assignment errors.



OFFICIAL BALLOT

MAY 10, 2010 NATIONAL AND LOCAL ELECTIONS
ASUNCION (SAUG), DAVAO (DAVAO DEL NORTE)

Ballot ID: 1
Clustered Precinct: 

PARAAN NG PAGBOTO

(1) Itiman ang loob ng oval: ● sa tabi ng pangalan ng kandidatong napili.
(2) Gumamit lamang ng "marking pen" sa pagmarka.
(3) HUWAG bumoto ng labis sa nakatalagang bilang sa napiling posisyon.

Signature of BEI Chairman

PRESIDENT Vote for not more than 1			
<input type="checkbox"/> 1. ACOSTA, Vetellano S. "DODONG" (KBL)	<input type="checkbox"/> 4. ESTRADA EJERCITO, Joseph M. "ERAP" (PMP)	<input type="checkbox"/> 7. PERLAS, Jesus Nicanor P. "NICK" (IND)	<input type="checkbox"/> 10. VILLAR, Manuel Jr B. "MANNY" (NP)
<input type="checkbox"/> 2. AQUINO, Benigno Simeon III C. "NOYNOY" (LP)	<input type="checkbox"/> 5. GORDON, Richard J. "DICK" (B.BAYAN-VNP)	<input type="checkbox"/> 8. TEODORO, Gilberto Jr. C. "GIBO" (LKS-KAM)	
<input type="checkbox"/> 3. DE LOS REYES, John Carlos G. "JC" (AKP)	<input type="checkbox"/> 6. MADRIGAL, Jamby A. "JAMBY" (IND)	<input type="checkbox"/> 9. VILLANUEVA, Eduardo C. "BRO. EDDIE" (BP)	
VICE-PRESIDENT Vote for not more than 1			
<input type="checkbox"/> 1. BINAY, Jejomar C. "JOJO" (PDP LABAN)	<input type="checkbox"/> 3. FERNANDO, Bayani F. "BF" (B.BAYAN-VNP)	<input type="checkbox"/> 5. MANZANO, Eduardo B. "EDU" (LKS-KAM)	<input type="checkbox"/> 7. SONZA, Jose Y. "JAY SONZA" (KBL)
<input type="checkbox"/> 2. CHIPECO, Dominador Jr F. "JUN" (AKP)	<input type="checkbox"/> 4. LEGARDA, Loren B. "LOREN" (NPC)	<input type="checkbox"/> 6. ROXAS, Manuel A. "MAR" (LP)	<input type="checkbox"/> 8. YASAY, Perfecto R. "KIDLAT" (BP)
SENATOR Vote for not more than 12			
<input type="checkbox"/> 1. ACOSTA, Jr. Nereus O. "NERIC" (LP)	<input type="checkbox"/> 17. ESTRADA, Jinggoy E. "JINGGOY" (PMP)	<input type="checkbox"/> 33. MAZA, Liza L "LIZA MAZA NG GABRIELA" (IND)	<input type="checkbox"/> 49. REMULLA, Gilbert Cesar C. "GILBERT" (NP)
<input type="checkbox"/> 2. ALBANI, Shariff Ibrahim H. "SHARIFF" (KBL)	<input type="checkbox"/> 18. GUICO, Ramon, Jr. N. "GETS KO" (LKS-KAM)	<input type="checkbox"/> 34. MITRA, Ramon B. "MON-MON" (NP)	<input type="checkbox"/> 50. RIÑOZA-PLAZO, Maria Gracia D. "GRACE" (AKP)



Design of Input Data

- For each of the 1,600 municipalities and districts of large cities, Comelec must allow political parties and authorized watchgroups to participate in checking the correct match between the latest ballot design and the CF-card configuration data for the PCOS for that municipality or district



Checking Correctness of Input Design

- The international certification agency paid by Comelec (SysTest Lab) must check and certify the correct match between ballot face and CF-card configuration data for each of the 1,600 municipalities and districts of large cities.

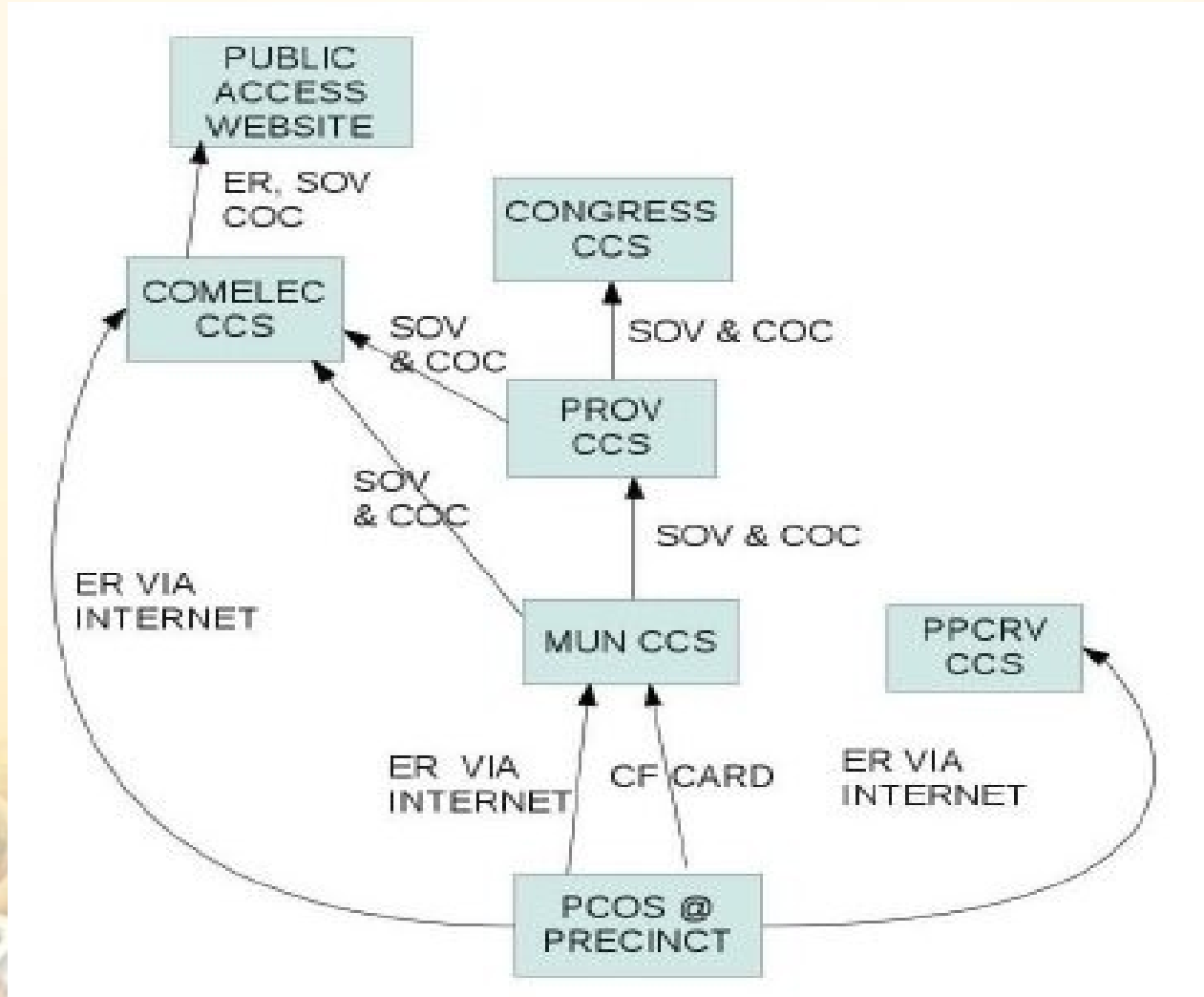


Transmission Design

- The 50,000+ PCOS voting machines will transmit their ER to which of the 1,600 municipal/city CCS canvassing computers?
- The 1,600 CCS canvassing computers will transmit their SOV and COC to which of the 80 provincial CCS computers?



Transmission Design Diagram



Checking Correctness of Transmission Design

- This design is a complicated problem and the political parties and election watchgroups must be involved in designing for correctness
- The international certification agency paid by Comelec (SysTest Lab) must check and certify the correctness of transmission design



Voting Day: Queue Management

- Voters do not know their clustered precinct numbers (CP#), traditional precinct numbers (TP#), and page number in the register of voters for the traditional precinct number (TP#), so they can not be given their ballots until they can find the page and sign thereat
- This delay in issuing ballots resulted in unmanageably long queues at each CP#, that lasted for many many hours.



Voting Day: Voter Verification of Choices

- Ensures that your votes are counted; according to your right of suffrage
- [RA9369, Sec7] (n) Provide the voter a system of verification to find out whether or not the machine has registered his choice;
- VVAT: voter verifiable audit trail: printed feedback VVPAT, video feedback VVVAT, audio feedback VVAAT, Braille feedback VVBAT, etc

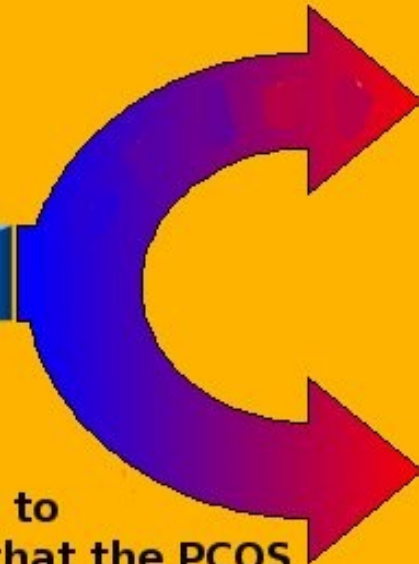


Paper Ballot with VVPAT

Voting with Paper Ballot with Voter-Verified Paper Audit Trail (VVPAT)



Your Vote



Paper Ballot

- Verified by voter
- Permanent record
- **Used in first count** and recounts
- May be counted by hand or machine

Voter-Verified Paper Audit Trail

- Verified by voter
- Permanent record
- Only used in recount or audit
- **Most likely will not be used or counted**

VVPAT is used to assure voter that the PCOS machine has interpreted his paper ballot correctly



Enforcing Security & Authenticity of ER

- Digital signing of ER by BEI, and of COC by BOC, ensures that vote counts are not tampered with, while being transmitted from PCOS to CCS to CCS.
- "The election returns transmitted electronically and digitally signed shall be considered as official election results and shall be used as the basis for the canvassing of votes and the proclamation of a candidate." (RA9369 Sec 19)



Transparency in Canvassing

- Each successfully and completely received ER/SOV/COC must be projected on large screen for the public to see, before being included in the canvass.
- This way incomplete data and unsuccessful transmission can easily be checked and reported



Incomplete City Canvass



COMMISSION ON ELECTIONS
REPUBLIC OF THE PHILIPPINES

Philippines 2010 Elections Results »

Results Date: May 24, 2010 4:10:15 PM PHT

The Philippines > IV-A > RIZAL > CITY OF ANTIPOLO > CP 271 0558A, 0558B, 0558C, 0558D, 0559A

UP

PRESIDENT of PHILIPPINES

VICE-PRESIDENT of PHILIPPINES

SENATOR of PHILIPPINES

\$contestResult

MEMBER, HOUSE OF REPRESENTATIVES of RIZAL - CITY OF ANTIPOLO - FIRST LEGDIST

PROVINCIAL GOVERNOR of RIZAL

\$contestResult

\$contestResult

MAYOR of RIZAL - CITY OF ANTIPOLO

VICE-MAYOR of RIZAL - CITY OF ANTIPOLO

MEMBER, SANGGUNIANG PANLUNGSOD of RIZAL - CITY OF ANTIPOLO - FIRST DIST

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Publication of Election Documents

- Disclosure of all documents related to preparations, actual conduct, and assessment of elections
- AESwatch request for 21 election-related documents - still pending with Comelec
- Election documents used in canvassing & consolidation must be made available in verifiably correct original form, with digital signature of BEI & BOC, so public can download and check correctness of documents themselves



Criticalness of Transparency

- To enhance credibility or faith in the automated system, as manifestation of the will of the people, by properly executed ERs, COCs, SOVs
- Credibility of AES, not because Comelec pronounced a resounding “success” in the media, without any factual basis



Thank You

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