HART InterCivic

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Hart InterCivic

The Hart InterCivic voting system was re-examined in Austin on May 25, 2006.
The version number of the revised systems are:

BOSS - version 4.2.13 – ballot design and generation sub-system
BallotNow - version 3.2.4 – scanner used for deposition of mail-in ballots
eSlate – version 4.1.3 – DRE voting device
JBC – version 4.1.3 -Judges Booth Controller used with eSlate to select voters' ballot
Tally – version 4.2.8 – central-count accumulator and reporting sub-system
Rally – version 2.2.4 – regional or central MBB uploading (throughput enhancement)
SERVO – version 4.1.6 – used to extract audit data from eSlates and JBC's
eScan – version 1.2.0 – scanner to read paper ballots
eCM – version 1.1.7 – used to generate security keys

Collectively, the component pieces make up Hart's System 6.1 voting system.

The entire system was reviewed since all components have been modified since the previous examination. The verification of the system's ability to record and tally votes correctly was done the previous day; (it was reported that all results were correct). Therefore, the examination on May 25 focused on the changes to the system and problems in the field since it was last examined. Examiners did cast votes but the results were not verified, as it was done on the previous day.

Findings

FIELD PROBLEMS

- Tarrant Co. - A reporting tool, *Fusion*, was used to merge results from the Hart system and another vendor's system to provide results to the Press. The morning after the election, a problem with the results was discovered. The stated cause was that the operator used incorrect filenames during the merge.

  The program was described as a glorified spreedsheet. This program is not certified and has not been examined. The program is not part of System 6.1. This type of error is easily detected as it was in this case. If results from any system could be exported to a standard format (see XML below), merging results from disparate systems would be easier.

- Tom Green Co. - A problem with a re-count occurred because some JBC's were cleared before they were backed-up. The results from the precincts are also stored in the eSlates, MBB's so a re-count was able to be done correctly. I recommend that the system be enhanced to check that a backup has been performed on the JBC before it is cleared.

- Galveston Co. - High humidity prevented some optical scan ballots from being read. In addition, duplicate numbers on the serialized ballots prevented them from being read.

  The high humidity issue can be controlled by improving the air-conditioning at the precincts. Hart has also implement software improvements which will make the system

more tolerant to high humidiy.

The duplicates were a result of a breakdown in quality control by the commerial printing company (also Hart).

- Zapata Co. - A malfunctioning eScan was discovered during the voting day. A replacement was brought in and the ballots were rescanned. However, improper handling of the ballots caused some ballots not to be scanned. After reviewing the process, the ballots where rescanned again and the public counter matched the signature roster.

No matter how solid the voting equipment is, a breakdown is inevitable. Therefore, more training is needed for the election workers so that they we prepared in the event of an election "exception".

BOSS

- The ballot setup program was enhanced to add support for the VVPAT modules (see below).

- It is now possible to include graphics on the ballot.

BALLOT NOW

It is now possible to print images on the ballot.

eSCAN

The eScan has been enhanced to record an image of a write-in vote. This image is stored on the MBB and uploaded into Tally so that an election worker can make a determination of the validity of the write-in on the Tally screen. This is merely a convenience which may not be applicable for use in Texas.

SECURITY

- A new segment to the security key used by the sub-systems to verify files and access has been added. The "GUID" allows the system to verify the key more quickly.

- The system uses the concept of roles to assign different privileges and responsibilities to the election workers. Therefore, only two or three people should have access to the entire system and all its functions.

- The vendor stated that the utility program used previously (before System 6.0) to zero-out the eScan votes has been disabled. The utility was not sold but rather used by Hart techincians as a "quick and dirty" way to clear votes. This action was not logged so the vendor had to be diligent that it does not "get out". Servo is now the only way to zero out a machine.

SERVO

The vendor representative stated that Servo is now bundled with all purchases so that a jurisdiction is not dependent on Hart to obtain the audit logs from the eSlates or JBC's.

eSlate and VVPAT

The VVPAT is a module which provides a "voter verifiable receipt" for the DRE's. Texas law does not require this functionality at this time. However, the VVPAT was reviewed and my findings are as follows:

- The printout is on a continuous tape which is encased under a hard plastic shell. It is easily to read and cannot be touched by a voter.

- After the voter casts his ballot, the paper is advanced so that the next voter cannot see the votes from the previous voter.

- The BOSS setup software defaults to **not** enabling the VVPAT so current systems without the VVPAT can be upgraded to version 6.1.

- A barcode representing the cast ballot record is printed on the tape for each ballot. This would facilitate a tally using the tape.

- Because the tape is continous, voter anonimity could be compromised if the signature roster was used with the tape. I did not take apart the VVPAT module to determine if a seal would need to be broken in order to view the tape.

XML

The Hart system has the ability to export the cast ballot records and election results to a XML format. If the industry was required to provide a standard format for cast ballots records, this would facilitate merging results from different vendors. This in turn allows a county to pick the best-of-breed for each type of ballot. For instance, vendor A may have the best optical scan system (often used for mail-in ballots or by small counties) and vendor B might have the best DRE (required by each jurisdiction by HAVA).

If a standard XML file export was required by each of the vendors' systems, a county would have no trouble combining the results from different systems.

The standard format would also allow the state to create a tabulation program which could be used to do random audits of precinct results.

Conclusion

The changes to the system from version 5 to 6.1 were minor overall with the exception of the addition of the VVPAT to the eSlates. Accuracy and security has not been compromised by the changes.

The system meets the current requirements of the Texas Election Code. I recommend certification.

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