ROXANNA MORITZ, C.E.R.A.
AUDITOR & COMMISSIONER OF ELECTIONS
600 W. 4TH Street
Davenport, Iowa 52801
Ph: (563) 326-8631   Fax: (563) 326-8601
Cell: (563) 370-3915
www.scottcountyiowa.com

To: Scott County Board of Supervisors
From: Roxanna Moritz, Scott County Auditor
Re: Recommendation for Purchase of Election Equipment
Date: March 27, 2017

As noted in our capital improvement discussion with the Board of Supervisors we have completed our review of the three election equipment options available as certified by the Iowa Board of Examiners for Voting Equipment. I am pleased to recommend that the Board approve the system offered by Election Systems and Software (ES&S) in the amount of $682,544.91. At our request, this price quote includes 80 backup flash drives not originally offered by ES&S. Backup flash drives give Scott County extra security to ensure timely reporting of election returns and flexibility in planning for election contingencies.

My staff and I have prepared a fairly comprehensive report for the Board regarding election equipment and our review process. As detailed in the report my office set up a review panel, this panel heard presentations and demonstrations from the three Iowa certified vendors of equipment and made commentary on the systems. My staff and I conduct onsite inspections and interviews of election officials in three other Iowa counties, each of which uses one of the three approved options. We then made a staff analysis of these systems, including a ten year and fifteen year cost analysis. Based on the results of this decision making we believe that the best choice for Scott County is the system offered by ES&S.

A representative of ES&S will be available at the Board's Committee of the Whole meeting on April 4, 2017 to answer questions Board members have, and we expect that she will make the equipment available at that time for demonstration and examination. I plan to attend that meeting as will Elections Supervisor Richard Bauer. If you have questions or other concerns you wish to discuss before the meeting please feel free to contact me.

Copy to: County Administrator Mahesh Sharma

Election System Update

Recommendations to the Scott County Board of Supervisors

ROXANNA MORITZ – SCOTT COUNTY AUDITOR

April 4, 2017

Election System Update

Recommendations to the Scott County Board of Supervisors

The Auditor's Office recommends that Scott County accept the proposal for new election equipment from Election Systems and Software (ES&S) for a total expenditure of $682,544.91. Scott County would purchase 68 Model DS200 Precinct Scanners with accompanying tote bins and back up flash drives for counting ballots cast in precincts; two Model DS850 High Speed Digital Image Scanners for central counting of absentee ballots; and 68 ExpressVote ballot marking devices with carrying cases. Included in this quote would be reporting software, installation, training, one year hardware and software warranty, and shipping and handling. Purchase of a standalone computer for compiling election results is not included in this proposal but will be made in a separate action.

INTRODUCTION

One of county government's most important functions is the conduct of elections. In Iowa the office of county auditor is charged with conducting all elections. These elections include massive turnout, county-wide elections, such as presidential general elections to elections for a small town of fewer than 100 voters. The processes for conducting all elections are essentially the same; it's the scale which makes them seem different.

Prior to the 2000 presidential election there was very little scrutiny of election processes. However, the recount that year of the vote for president in four counties in Florida demonstrated that there were significant, legitimate concerns with voting systems. Since then there has been intense scrutiny of elections and significant voter questions about the integrity of voting systems.

These concerns led to the passage of the Help America Vote Act (HAVA) in 2002 which caused a substantial change in how elections are conducted. For federal elections HAVA required states to update to officially certified voting systems, to develop and implement security policies for those systems, to provide a centralized and standardized voter registration system and to provide various forms of assistance to people with disabilities so that they could vote in their precinct polling places. Most states, including Iowa, apply HAVA requirements to their local elections. HAVA also provided federal funds to help pay for these changes. The deadline for compliance was January 1, 2006.

The push to upgrade to certified elections systems caught Scott County by surprise. The system in use at that time was only six years old but was not certified. The system was withdrawn from the Iowa market as it could not pass certification requirements. After a period of unsuccessful resistance the county leased certified equipment to comply with HAVA, and eventually bought the system in use now. Please refer to the 2009 Auditor's report "Status of Voting Systems" for a more detailed report regarding this history.

Election Systems

Prior to the enactment of HAVA there were four basic election systems in use in the United States. Some localities also used voter assistance technology to help disabled voters to cast ballots in their local polling places. Below are the basic systems.

Paper ballots – A significant number of jurisdictions continue to manually count paper ballots. While not a type of "voting equipment," beyond the pen or pencil used to mark the ballot, many of the issues of ballot design and voter intent that effect all voting systems are relevant to hand counted paper ballots as well. Early ballots were not standardized but instead were provided by the voter (sometimes hand written), the candidates or the political parties. A standardized, government produced version known as the Australian Secret Ballot came into use in the United States starting in 1888. Many rural jurisdictions did not adopt the Australian Secret Ballot until well into the 20th Century. Approximately 4% of voters cast hand counted ballots in the 2012 Presidential election. The picture below is a glass ballot box used to prevent ballot stuffing.

Mechanical Gear & Lever Voting Machines - Mechanical gear and lever machines were first introduced in 1892 and used in every major city by 1930. This system prevented over votes, sped up the vote counting process, and significantly reduced the chance of dishonest vote counting because the votes are counted by machine. However, gears wear out over time and the system was shown to cause significant under votes. As recently as

1996, mechanical lever machines were used by 20.7% of registered voters in the United States. The most common version was the Myers Automatic Booth pictured below.

Punch Card Voting Systems - Punch card systems employ a pre-scored card marked with numbers which correspond to candidates and ballot issues listed in a separate booklet or overlay and a small clipboard-sized device for holding the ballot for punching votes. Voters punch holes in the cards opposite their choice of candidate or ballot issue using a supplied punch device. After voting the voter places the ballot into a computer vote-tabulating device. The most popular punch card system, the Votomatic shown below, became infamous in the recount of the 2000 Florida presidential election for the butterfly ballots, hanging chads, and dimpled or pregnant chads.

Direct Recording Electronic (DRE) Systems - DRE systems use one of three basic interfaces to record votes directly into computer memory (pushbutton, touchscreen or dial). The voter's choices are stored via a memory cartridge, diskette or smart card and added to the choices of all other voters. The first generation of DREs used a push-button interface, while later systems use a touchscreen or dial interface. These later versions also come with audio and other accessibility features for people with disabilities. Some DREs produce printed verifications while others do not. First patented 1974, few jurisdictions used DREs until 2006. That year 36% of the counties (with 38.4% of registered voters) used DREs due to Help America Vote Act requirements to provide an assistance system for people with disabilities. DREs came under intense scrutiny as implementation problems emerged and computer experts demonstrated that DREs are susceptible to hacking. In 2004 the Secretary of State for California decertified all DRE systems in his state. In 2006 the

Governor of Maryland publicly urged people to vote by absentee ballot instead of using the DRE machines in the General Election after problems with the machines emerged during Maryland's primary election earlier that year. A sample DRE machine is shown below.

Optical Scan Systems - Optical scan systems combine a paper ballot with the DREs recording and tabulation of votes into computer memory. Voters mark paper ballots by filling in an oval or box, or completing an arrow. These paper ballots are subsequently tabulated either on a precinct-based optical scan system in the polling place (precinct count) or collected in a ballot box to be scanned at a central location (central count). The first optical scan system came into use in 1962, but few jurisdiction used the new technology until the Federal Election Commission established voting system performance and test standards in 1990. Because optical scan systems use a computer interface they are susceptible to similar hacking concerns as the DRE systems. However, optical scan systems offer the ability to manually recount ballots. DRE systems do not have this feature. Below are two optical scan machines: left is a precinct count and right is a central count.

Voter Assistance Systems - These systems can be either DREs or ballot marking devices. Ballot marking devices provide an interface to assist voters with disabilities in marking a

paper ballot, which is then scanned or counted manually. Most ballot marking devices provide a touchscreen interface together with audio and other accessibility features similar to those provided with DREs, but rather than recording the vote directly into computer memory, the voter's selections are indicated through marking a paper ballot, which is then scanned or counted manually. Below is the Auto-MARK, the ballot marking device now used in Scott County.

The Current System

Scott County currently uses the following election equipment systems.

Accu-Vote OS The primary voting system is the Accu-Vote OS. This is the machine into which voters place their marked ballots. It interprets votes on the ballot using "dark mark logic," whereby the computer selects the darkest mark within a given area of the ballot as the correct vote. The Accu-Vote OS is a precinct count system which immediately tabulates votes at the polling place. The tabulation is recorded electronically and stored in a memory card. At the close of the election precinct election officials cause the Accu-Vote OS to print out a total vote count. The memory cards and the print outs are returned to the Auditor's Office for final tabulation. Additionally, up to seven Accu-Vote OS units are used to count absentee ballots. Scott County has 80 Accu-Vote OS machines.

AutoMark The County's accessibility voting system is the AutoMark, an electronic ballot marking device to aid voters with disabilities in marking standard paper ballots. We use these machines to comply with HAVA and applicable Iowa law. The AutoMark is equipped with an audio interface by which the computer "reads" a paper ballot and prepares an audio "interpretation" of the ballot for the visually impaired. It uses a touch screen for voting. It can magnify the image of the ballot or reverse image of the ballot (change black lettering to white and white background to black). Once voting preferences are made the machine will mark the ballot using an ink jet printer. These ballots are then tabulated using the Accu-

Vote OS machine. Any voter is entitled to use these machines, not just those with disabilities. Scott County has 64 AutoMark machines.

Global Election Management System (GEMS) The system used to compile the votes from the individual precincts is the Global Election Management System (GEMS). The hardware component is a note book computer, dedicated to run only the GEMS software. It is never connected to the internet or the county computer network. The processing component is proprietary software licensed to Scott County. At the conclusion of an election, memory cards from each individual Accu-Vote OS machine are placed into a special reader connected to the GEMS laptop. The memory from each card is downloaded into the GEMS system and the software compiles the precinct totals to produce the countywide voting results.   These results are downloaded into a flash drive. The flash drive is then connected to the county network for posting on our website and the website for the Iowa Secretary of State.

The Reason for Updating This System

The Accu-Vote OS was state of the art technology in 1983 when it was initially developed. The first model was sold in 1989. Now, 28 years later, the system is outdated and obsolete. It is no longer under manufacture, although spare parts are still available. Since 2010, 80 of Iowa's 99 counties have purchased new equipment because the old equipment is wearing out and unreliable. Most of these counties were using the Accu-Vote OS. At least five other counties are actively planning to buy new equipment this year.

The county purchased its system in 2006 and experienced reliability issues from the start. Because Scott County was the last county to purchase HAVA compliant equipment we received the oldest models. There were persistent minor mechanical problems with this equipment. Continually, we experience a lot of problems calibrating the system to accept 14 inch ballots used in governor year general elections. We had significant memory card issues which the county spent $44,000 to remedy.

The earlier minor mechanical problems are now serious mechanical problems. Printers are breaking. Machine rollers are failing. Control buttons are wearing out. During the 2016 general election we replaced four Accu-Vote OS field units and three Auto-MARKs with spares because the field units failed to work. We currently have more than 30 junked (unrepairable) Accu-Vote OS units and three junked Auto-MARKS in storage at our warehouse facility.

The Possible Options

The Iowa Board of Examiners for Voting Systems has approved three new election systems from which counties can choose. (See Appendix I) These include systems from Election Systems and Software (ES&S), Dominion Voting Systems, Inc. (dba Election Source), and Unisyn. Only optical scan systems are approved for use in Iowa as these systems each produce a voter verified ballot. No DRE system has been approved in Iowa as no DRE system produces a voter verified ballot. The new voter assistance terminals approved for use in Iowa each produce their own ballots. The older system used a ballot marking device which marked a standard ballot. ES&S and Unisyn use a thermal paper printer to mark specially sized blank paper with ballot choices. This does create the possibility of discovering a voter's choice if only one ballot is cast with the VAT. The Dominion VAT prints a regular sized ballot (printer not included) and uses a variety of marks to disguise ballot choices. It is tethered to the scanner with a relatively short cable.

The central count scanner for ES&S is a proprietary product designed and built by ES&S. The other vendors use over the counter scanners.

Each proposed system would include 68 precinct count ballot scanners, 68 voter assistance terminals, two central count scanners, compiling and reporting programs to aggregate election results from the various precincts and create a final report for printing and web site display, on-site testing and verification of equipment, training of election officials and poll workers and one year warranty. We requested ES&S as the recommended vendor to include costs for backup flash drives for the precinct scanners. Vendor descriptions of their systems are contained in Appendix II.

BASIS FOR RECOMMENATION

My office established a three tiered decision making process to help make the recommendation to the Board. First was to set up a panel to review and rank the options. Second was to conduct on-site visits and get reviews from other Iowa auditors regarding their experiences. Third was to have auditor staff review the options and then reach a conclusion as to which equipment would best meet the needs of Scott County voters, taxpayers and precinct election officials.

Review Panel

In August 2016 the Scott County Auditor's Office put together a panel to review these equipment options. The panel included Diane Holst, Scott County Supervisor, Matt Hirst, Scott County Director of Information Technology, Douglas Jones, Computer Science

Professor at the University of Iowa (and a nationally recognized expert on election systems), Rik Shannon, Public Policy Manager for the Iowa Developmental Disabilities Council and Michael Angelos, community member and noted critic of electronic election systems. The panel met on August 10, 2016 and received presentations from the three vendors. Panel members asked questions and were able to personally examine the equipment. The election staff for the Auditor's Office also participated in this meeting.

The panel next met on August 23, 2016 to discuss the strengths and weaknesses of each system. Most panel members thought that ES&S had a superior product compared to the other vendors. Matt Hirst, Douglas Jones and Diane Holst found the following:

The central count scanner was the fastest of the three models and would sort ballots which the other products did not.

The precinct scanner was easier to set up and more precinct official friendly.

The ballot marking device was easier to use and much more technically advanced with QR code scan capability. This would allow voters to mark a sample ballot at home, scan the sample ballot at the polling place and automatically mark an official ballot for voting.

The precinct equipment was more rugged than the other products.

The precinct equipment had battery backup which one of the competitors did not. (See Appendix III)

Rik Shannon concurred in those observations and favored the ES&S ballot marking device to the other models because it was the most like an AutoMark which many people with disabilities prefer. (See Appendix III)

Michael Angelos preferred the option of hand counting ballots rather than using electronic scanners. If scanners are purchased he recommended that an impartial technical consultant analyze the system for errors and security risks. He expressed no opinion on which of the available options were preferable. (See Appendix III)

On-Site Visits

Election staff visited auditor's offices in three different Iowa counties to gain insight about each system from actual users. Election staff in each county was satisfied with their new systems, especially compared to the old systems. Each system had drawbacks, some of which were more significant than others.

Clinton County – Clinton County purchased the system offered by ES&S in 2014. The main selling point was the DS850, the central count scanner. The sorter function prevents unnecessary and frustrating delays in counting ballots. Another selling point was the voter assistance terminal (VAT). It was easier to use than other VATs. Opening and closing an election with the MS200 precinct count scanner was easier for poll workers compared to the other systems. Clinton County used the VAT as the only method of voting in two small school board special elections which reduced the cost of printing ballots. (Clinton County also utilizes ballot on demand to print ballots for small turnout elections. Scott County has not adopted this method). The only complaint was that the on/off switch for the VAT was under a sealed door, requiring poll workers to cut the seal for access to the switch and then resealing the door before opening the polls.

Dubuque County – Dubuque County purchased the system offered by Unisyn in 2014. The main selling point was the central count scanner which was a big improvement over the previous system. However, this scanner (an over the counter commercial scanner) does not sort ballots with write-ins, over votes or issues regarding reading the ballot. In the 2016 general election there were many over voted ballots which led to constantly stopping the scan to find these ballots, slowing the vote count and frustrating election officials. In the 2016 general election three precinct count scanners failed to work on election day for no apparent reason. Many voters using the VAT request help from poll workers to print out a ballot. Also poll workers find the VAT difficult to close down due to a "hidden button" on the view screen and issues with typing in correct passwords for shutdown.

Cedar County – Cedar County purchased the system offered by Dominion in 2014. The voter assistance terminal was difficult and intimidating for poll workers. Consequently, election staff need to visit each polling site to ensure the VAT is working correctly. No voter has ever used it. The over the counter central count scanner had the same problem with write-ins and over voted ballots as the scanner in Dubuque County. However, staff did not rate this as a major problem due to relatively few absentee ballots cast in Cedar County.

Election Staff Review

The Scott County election staff prefers the ES&S system. This preference is based on the vendors' presentations, advisory committee observations and the on-site visits and interviews of election staffs in other counties.

The ES&S central count scanner's ability to sort ballots and thereby avoid delays in counting and processing absentee ballots was a clear advantage. In major elections in Scott

County more than 40,000 absentee ballots will be cast by voters (upwards of 45 percent of the vote) and there will be several hundred absentee ballots with over votes or other issues requiring precinct officials to examine these ballots. Constantly stopping the process to find these ballots will greatly slow the counting process and lead to great frustration for absentee and special voter precinct officials. Also, the sorting function can be programmed to sort out ballots for a given race if there were a recount in that race. This would avoid the time consuming task of sorting absentee ballots by precinct before beginning a recount.

The easier to use ES&S VAT was another clear advantage. Unlike the Dominion system the ES&S VAT is not tethered to the ballot scanner allowing for more flexible positioning in a given voting location. The thermal paper printer is built into the ES&S system unlike the Dominion VAT which requires a separate laser printer. The QR Code reader for sample ballots is an advantage over the Unisyn system. In the future it can be used with a smart phone which will appeal to younger voters who organize and conduct many life activities using smart phones. (The EAC has approved this feature and Iowa approval is pending.)

One final plus is that thermal paper ballots can potentially reduce ballot printing costs. It can save ballot printing in smaller, low turnout elections with voters using blank thermal ballots instead of preprint paper ballots. Similarly, it can save these costs if used at early voting locations replacing the preprinted ballots with thermal ballots.

The one big drawback of the ES&S and Unisyn VAT is that the thermal paper ballot is easily distinguishable from regular preprinted ballots. This issue can be offset by aggressively promoting use of the VAT by voters.

The ES&S precinct count scanner is easier to set up and close down for poll workers than its two competitors. The one disadvantage is the location of the on/off switch behind a sealed door. The battery backup was an advantage over the Unisyn system.

Cost Comparisons

The individual price quotes from the three vendors can be found in Appendix IV. The table below is a comparison of these quotes based on a ten year life cycle and a fifteen year life cycle. These life cycles are based on an industry standard estimate for electronic equipment similar to electronic election systems. The ES&S quote is from the original quote which did not include the additional back-up flash drives. The Dominion quote includes $542,810 for precinct equipment and $58,300 for central count equipment.

TABLE 1 COST COMPARISONS

	Dominion	ES&S *	Unisyn
Purchase Price	$601,110	$674,706	$615,691
Annual Costs	69,734	38,440	50,242
10 Year Lifecycle Cost	627,606	345,960	452,178
Total 10 Year Costs	1,228,716	1,020,666	1,066,869
15 Year Lifecycle Cost	976,276	538,160	703,388
Total 15 Year Costs	1,577,386	1,212,866	1,319,079
		* Annual costs include a two year maintenance cycle	

The annual costs include software licensing and equipment maintenance. The first year of cost is included in the purchase price. Therefore, 10 Year Lifecycle Cost equals annual costs multiplied by nine years, and 15Year Lifecycle Cost equal annual costs multiplied by fourteen years. Total 10 Year Costs and Total 15 Year Costs equals Purchase Price plus the corresponding lifecycle costs. ES&S offers a one year and a two year maintenance option, and the table is based on the two year option. Election staff believes that maintenance prior to the biennial general election is sufficient to preserve the equipment in good order given the ruggedness of the ES&S system.

A comparison of the different systems based on price alone indicates that ES&S has the lowest lifecycle cost, followed by Unisyn and then Dominion. Of course these systems are not identical and details of function are different. Additionally, because of how they are configured, Dominion and Unisyn systems require additional printers which are not included in these costs. Dominion in particular is very printer heavy.

Conclusion

ES&S is the clear choice based on functionality. This system works much better than the other two options. It is more rugged than the other two systems. It is easier to configure to the various polling locations in Scott County. Poll workers, both at the precinct level and at the central count of absentee ballots (accounting for an average of 45 percent of the vote in general elections) will have fewer problems using this system. It

comes with a battery backup which the Unisyn system does not have. Regular voting can continue with the ES&S system in the event that power is lost in a polling place.

ES&S is also the clear choice in terms of lifecycle costs. The costs of the various systems may be based on pricing strategy or estimates of actual costs and revenue to each firm. If that is the case then ES&S puts more emphasis on producing a product which will last longer and consequently cost more, while the other firms may be producing a product that is not as high quality and consequently costs less. This pricing strategy collects more revenue over time based on licensing and maintenance fees.

Based on these considerations my staff and I strongly recommend that Scott County purchases the election system from ES&S.

Appendix I

Iowa Approved Voting Systems

State of Iowa
Approved Voting Systems

General Information About Voting Equipment Certification in Iowa:

Only voting systems on this list can be used for elections in Iowa. This equipment has been examined and approved for use by the Iowa Board of Examiners for Voting Systems. The voting systems listed in this document have been approved for use and are (as far as we know) currently available. The year indicated after the name of a voting system indicates the date of the most recent approval.

The Board of Examiners must also approve changes to these voting systems for use.

Only voting systems that have been tested against the 2002 Federal Voting Systems Standards or the 2005 Voluntary Voting System Guidelines and meet those standards may be submitted to the Board of Examiners for certification. After January 1, 2006, all voting equipment used in federal elections must meet the requirements of the Help America Vote Act.

A list is available of voting systems approved for use in Iowa before 2005, which are no longer in use. Please contact the Election Director to receive a copy.

Certification is limited to the specific software versions that have been approved. If a system was approved in 2006 only the version approved that year can be used. If the system was upgraded after certification, the new version cannot be used unless is has been certified. The Board of Examiners certifies voting equipment, not vendors.

Report Problems: If you have problems with your voting equipment at any election, please report the problem in writing to the Director of Elections in the Secretary of State's office. The Board of Examiners will be notified of the problem, and if necessary, the Board will contact the vendor.

Dawn Williams
Director of Elections
Office of the Secretary of State
321 E. 12th Street
Des Moines, IA 50319
(515) 281-0145
sarah.reisetter@sos.state.ia.us

State of Iowa
Approved Voting Systems

Company Name and Address	Voting System (Only the versions listed are approved.)
Premier Election Solutions 1253 Allen Station Parkway Allen, TX 75002 (800) 433-8683 info@premierelections.com	**Assure 1.2** approved 9/8/2010 includes: GEMS (Global Election Management System) software version 1.21.5 AccuVote OSX model A with version 1.2.6 AutoMARK VAT model A300 with version 1.3.3460 AIMS software version 1.3.572 Key Card Tool with version 4.7.8 **Assure 1.2** approved 6/27/2008 includes: GEMS (Global Election Management System) software version 1.20.2 and updated software version 1.18.24 AccuVote OS model D with version 1.96.10 AccuVote OSX model A with version 1.0.3 AutoMARK VAT model A300 with version 1.3.2925 AIMS software version 1.3.552 Key Card Tool with version 4.7.1 **N-1-06-22-22-004** approved 6/22/2007: Includes Express Poll 5000, other system elements remain unchanged and certified. **N-1-06-22-22-003** approved 8/4/2006: Changes to obsolete TSX hardware components approved, other system elements remain unchanged and certified. **N-1- 06-22-22-002** approved 3/15/2006: Upgrade AccuVote TSX-DREs to version 4.6.4, other system elements remain unchanged. **N-1-06-22-22-001** approved 9/7/2005: AccuVote-TSX DRE Touch Screen, ver 4.6.3 AccuVote-TSX DRE Touch Screen with AccuView Printer Module version 4.6.3 AccuVote-OS Optical Scan (model D) with firmware version 1.96.6 GEMS (Global Election Management System) Software version 1.18.24

State of Iowa
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Election Systems and Software 11208 John Galt Blvd. Omaha, Nebraska 68137 (800) 247-8683 info@essvote.com	**EVS 5.2.0.2, approved 05-28-2015** Software ElectionWare 4.6.0.0 ExpressPass v. 1.1.0.0 ExpressVote Previewer v. 1.4.0.0 Removable Media Service v. 1.4.5.0 AutoMARK VAT Previewer v. 1.8.6.0 Regional Results NA Election Reporting Manager v. 8.11.0.0 Event Log Service 1.5.5.0 Hardware AutoMARK VAT v. 1.8.6.0, hw v. 1.0, 1.1 & 1.3 DS200 v. 2.12.02, hw v. 1.2 & 1.3 DS850 v. 2.10.0.0, hw v. 1.0 ExpressVote v. 1.4.0.0, hw v. 1.0 Plastic Ballot Box, hw v. 1.2, 1.3 & 1.4 Steel Ballot Box, hw v. 1.0, 1.1 & 1.2 COTS Software Microsoft Windows 7 SP1 Microsoft Server 2008 R2 SP1 Symantec Endpoint Protection v. 12.1.4 **Unity 3.4.1.1, approved 12-24-2014** Software Audit Manager v. 7.5.2.0 Election Data Manager v. 7.8.2.0 ESS Image Maker v. 7.7.2.0 AutoMARK Information Manager v. 1.3.257 AutoMARK VAT Previewer v. 1.3.2907 Hardware Programming Manager v. 5.9.1.0 Election Reporting Manager v. 7.9.1.0 Log Monitor Service v. 1.1.0.0 Hardware AutoMARK VAT v. 1.3.2907, hw v. 1.0, 1.1 & 1.3 Model 100 v. 5.4.4.5, hw v. 1.3 DS200 v. 1.7.1.0, hw v. 1.2 Model 650 v. 2.2.2.0, hw v. 1.1 & 1.2 DS850 v. 2.9.0.0, hw v. 1.0 Plastic Ballot Box, hw v. 1.2 & 1.3 Steel Ballot Box, hw v. 1.0, 1.1 & 1.2 COTS Software Cerberus FTP Server v. 6.0.6.0 IPSwitch WS_FTP 12 v. 12.4 Microsoft Windows 7 SP1 Microsoft Server 2008 R2

	Unity 3.4.0.1, approved 1/18/2013: Software: Audit Manager, v. 7.5.2.0 Election Data Manager, v. 7.8.1.0 ESS Image Manager, v. 7.7.1.0 Hardware Programming Manager, v. 5.8.0.0 Election Reporting Manager, v. 7.8.0.0 AutoMARK Information Manager, v. 1.3.257 AutoMARK VAT Previewer, 1.3.2907 Hardware: Model 100 5.4.4.5, hw version 1.3 Model 650 v. 2.2.2.0, hw version 1.1 & 1.2 AutoMARK v. 1.3.2907, hw vrsns 1.0, 1.1 & 1.3 DS200 v. 1.6.0.0, hw version 1.2 DS850 v. 2.2.0.0, hw version 1.0 Plastic Ballot Box, hw version 1.2 & 1.3 Steel Ballot Box, hw version 1.0, 1.1 & 1.2 COTS Software: Cerberus FTP Server v. 4.0.9 IPSwitch WS_FTP 12 v. 12.3 **N-2-02-22-22-007, approved 12/13/2006:** Software: Audit Manager, v. 7.3.0.0 Election Data Manager, v. 7.4.4.0 ES&S Image Manager, v. 7.4.2.0 IVotronic Image Manager, v. 2.0.1.0 Hardware Programming Manager, v. 5.2.4.0 Data Acquisition Manager, v. 6.0.0.0 Election Reporting Manager, v. 7.1.2.1 AutoMARK Information Management System, v. 1.2.18 Hardware: IVotronic RTAL booth 9.1.6.2 IVotronic 9.1.6.2 Model 100 5.2.1.0 Model 650 2.1.0.0 AutoMARK 1.1 (Model A200) Firmware v. 1.1.2258 **N-1-02-22-22-003**--approved 4/18/2005: **Unity 2.5,** including the following tabulation devices: iVotronic version 9.0.0.0 (DRE), M100 version 5.1.0.0 (precinct count OS), M 650 version 2.0.1.0 (central count OS) **N-1-16-22-22-001**—approved 1/30/2006 AutoMARK Voter Assist Terminal, v. 1.0 (Model A100); and AutoMARK Information Management System, v. 1.1.10

State of Iowa
Approved Voting Systems

Unisyn Voting Solutions 2310 Cousteau Court San Diego, CA 92081 1-760-734-3233 mktg@unisynvoting.com	**Open Elect 1.3m, approved 05-28-2015** Software Ballot Layout Manager v1.3 Election Manager v.1.3m Software Server v.1.3 Election Server 1.3 Tabulator Client v. 1.3m Tabulator v.1.3 Tabulator Reports v.1.3 Scripter v.1.3 & 1.3m Validator v. 1.3 & 1.3m Hardware OVO v 1.3m, Hardware version Rev. A & E OVI, 7" & 15" Screens v.1.3, hardware version Rev. A, B & F OVCS v.1.3, hardware version v.1.3 OVO Ballot Box 1, hardware version 1.1 OVO Ballot Box 2, hardware version 1.2 OVO Ballot Box 3, hardware version 1.2 OVO Ballot Box 4, hardware version 1.2 OVO Ballot Box 5, hardware version 1.3 OVO Ballot Box 6, hardware version 1.3 **OpenElect 1.3, approved 12/23/2014:** Software OpenElect OVI with firmware v 1.3 OpenElect OVCS with firmware v. 1.3 Ballot Layout Manager v. 1.3 Election Manager v. 1.3 Software Server v. 1.3 Election Server v. 1.3 Tabulator Client v. 1.3 Tabulator v. 1.3 Tabulator Reports v. 1.3 Scripter v. 1.3 Validator v. 1.3 **OpenElect 1.1.IA.1, approved 6/29/2012:** Software: Ballot Layout Manager v. 1.1 Election Manager v. 1.1 Software Server v. 1.1 Election Server v. 1.1 Tabulator Client v. 1.1 Tabulator v. 1.1 Hardware: OpenElect OVO v. 1.1.IA.1 OpenElect OVI v. 1.1

State of Iowa
Approved Voting Systems

Dominion Voting Systems, Inc. 1201 18th St., Suite 210 Denver Colorado, 80202	**Democracy Suite 4.6; approved 02-13-2013** <u>Software</u> Democracy Suite EMS v. 4.6.07 <u>Hardware</u> ImageCast Precinct v. 4.6.4, hw v. 320A ImageCast Evolution v. 4.6.2.3, hw v 400A ImageCast Central v. 4.6.3, demonstrated with hardware version Canon DR-X10C **Democracy Suite 4.14_B. approved 04-23-2014** Election Management System v. 4.14_B w/ MS Win 7 ImageCast Precinct Optical Scan hw v. 310A/C ImageCast Evolution Optical Scan hw v. 410A ImageCast Central Optical Scan Hardware Canon DR-X10C, COTS scanners Canon DR-7550C and Canon DR-G1130

Voting Systems in Iowa

All Iowa counties use optical scan systems and paper ballots with a ballot marking device for persons with disabilities.

Revised 8/2016

Voting System:

- Premier OS with AutoMARK
- Premier OSX with AutoMARK
- ES&S DS200 with AutoMARK
- Unisyn OVO with OVI
- ES&S M100 with AutoMARK
- Dominion ImageCast Precinct

County voting systems:

- Lyon — Unisyn OVO
- Osceola — Unisyn OVO
- Dickinson — Premier OS
- Emmet — ES&S M100
- Kossuth — ES&S DS200
- Winnebago — Unisyn OVO
- Worth — Unisyn OVO
- Mitchell — Dominion ImageCast Precinct
- Howard — Unisyn OVO
- Winneshiek — Unisyn OVO
- Allamakee — Unisyn OVO
- Sioux — Unisyn OVO
- O'Brien — Unisyn OVO
- Clay — Unisyn OVO
- Palo Alto — ES&S DS200
- Hancock — Unisyn OVO
- Cerro Gordo — Unisyn OVO
- Floyd — Unisyn OVO
- Chickasaw — Unisyn OVO
- Plymouth — Unisyn OVO
- Cherokee — Unisyn OVO
- Buena Vista — Unisyn OVO
- Pocahontas — Premier OS
- Humboldt — Unisyn OVO
- Wright — Unisyn OVO
- Franklin — Unisyn OVO
- Butler — Unisyn OVO
- Bremer — Dominion ImageCast Precinct
- Fayette — ES&S M100
- Clayton — ES&S M100
- Woodbury — ES&S M100
- Ida — Unisyn OVO
- Sac — Unisyn OVO
- Calhoun — Unisyn OVO
- Webster — Unisyn OVO
- Hamilton — Unisyn OVO
- Hardin — Dominion ImageCast Precinct
- Grundy — ES&S M100
- Black Hawk — ES&S DS200
- Buchanan — Unisyn OVO
- Delaware — ES&S DS200
- Dubuque — Unisyn OVO
- Monona — Unisyn OVO
- Crawford — Unisyn OVO
- Carroll — Unisyn OVO
- Greene — Unisyn OVO
- Boone — Unisyn OVO
- Story — Unisyn OVO
- Marshall — Unisyn OVO
- Tama — ES&S M100
- Benton — Unisyn OVO
- Linn — ES&S DS200
- Jones — ES&S DS200
- Jackson — Unisyn OVO
- Harrison — Unisyn OVO
- Shelby — Unisyn OVO
- Audubon — Unisyn OVO
- Guthrie — Premier OS
- Dallas — Unisyn OVO
- Polk — Unisyn OVO
- Jasper — ES&S DS200
- Poweshiek — Unisyn OVO
- Iowa — Unisyn OVO
- Johnson — ES&S M100
- Cedar — Dominion ImageCast Precinct
- Clinton — ES&S DS200
- Scott — Premier OS
- Muscatine — ES&S M100
- Pottawattamie — ES&S DS200
- Cass — Unisyn OVO
- Adair — Dominion Imagecast Precinct
- Madison — Unisyn OVO
- Warren — Unisyn OVO
- Marion — Unisyn OVO
- Mahaska — Unisyn OVO
- Keokuk — Premier OSX
- Washington — Premier OS
- Louisa — Unisyn OVO
- Mills — Unisyn OVO
- Montgomery — Unisyn OVO
- Adams — Unisyn OVO
- Union — Premier OSX
- Clarke — Unisyn OVO
- Lucas — Dominion Imagecast Precinct
- Monroe — Unisyn OVO
- Wapello — ES&S M100
- Jefferson — Premier OS
- Henry — Unisyn OVO
- Des Moines — Unisyn OVO
- Fremont — Unisyn OVO
- Page — Unisyn OVO
- Taylor — Unisyn OVO
- Ringgold — Unisyn OVO
- Decatur — Unisyn OVO
- Wayne — Dominion Imagecast Precinct
- Appanoose — Dominion Imagecast Precinct
- Davis — Premier OS
- Van Buren — ES&S M100
- Lee — ES&S DS200

Appendix II

Vendors and Options

DS 200®
The Next Generation
Precinct Tabulator & Scanner

The Next Generation

ES&S' experience combined with customer feedback and industry's best practices take traditional optical scanning to a new level. The DS200° is an intelligent, advanced, integrated solution. It features the latest digital image technology available on the market.

Top 5 Reasons DS 200® is the Best

Wireless: Accumulates and transmits votes directly from the polling place via wireless connection

Flexible: Processes a variety of ballot sizes and designs, from 11" to 19", including the Expressvote Ballot Activation Card

Convenient: Lightweight, compact, and easy to set up and use in the polling place

Progressive: Includes extra USB ports and expandable memory to accommodate future EAC standards

Smart: Uses Intelligent Mark Recognition technology to remove the guesswork of determining what dictates a mark for a candidate
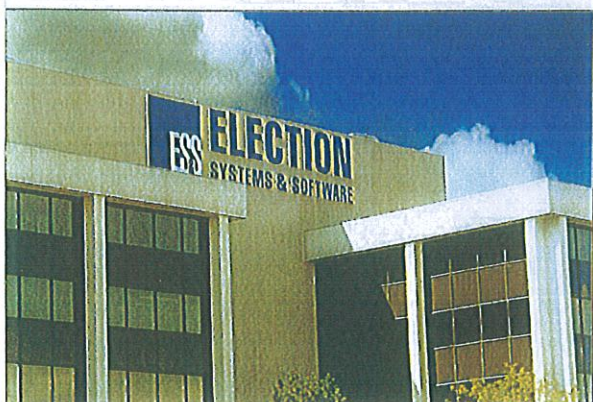
experience.
reliability.
security.
innovation.
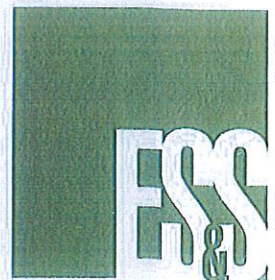
Benefits and Features

2005 VVSG Compliant

Fully compliant usability, accessibility, and security enhancements with the 2005 Voluntary Voting Systems Guidelines

Accessible

Independence and privacy is guaranteed for people with special needs by accepting ballot from the AutoMARK®, our ballot-marking device

Large Communication Screen

12-inch LCD touch screen improves voter communication and supports multiple languages

Integrated Thermal Printer

Thermal paper eliminates the worry of running out of ink on Election Day

Power Management

Internal battery pack provides reliable and sustained power management, even in the event of a power outage

Interactive Touch Screen:

Opening and closing polls is easier with the DS200®. The large touch screen improves the user experience. Election staff and poll workers agree that setup, diagnostic functions and online help are easy with the DS200®.

Voters benefit from real-time prompts flagging over-voted, under-voted, and blank ballots.

Improve the election experience with ES&S' DS200®.

Wireless Modem Technology

Benefits

- Reduces wait time for election night results
- Sent over a secure channel (encrypted with SSH)
- Fast data rates
- Multiple wireless providers results in flexibility, using the provider that services you jurisdiction best

Security

- Tabulators continually write Election Results to a USB stick for a dependable primary backup
- All data sent via Secure File Transfer Protocol Server
- DS200° only sends communications out...nothing can be received from an outside source
- Armed with advanced Intrusion Detection System
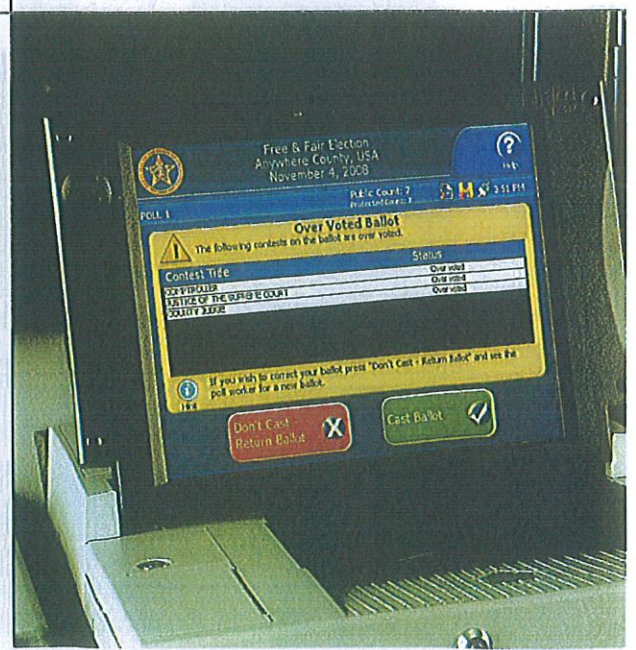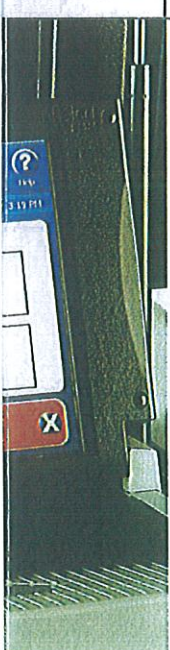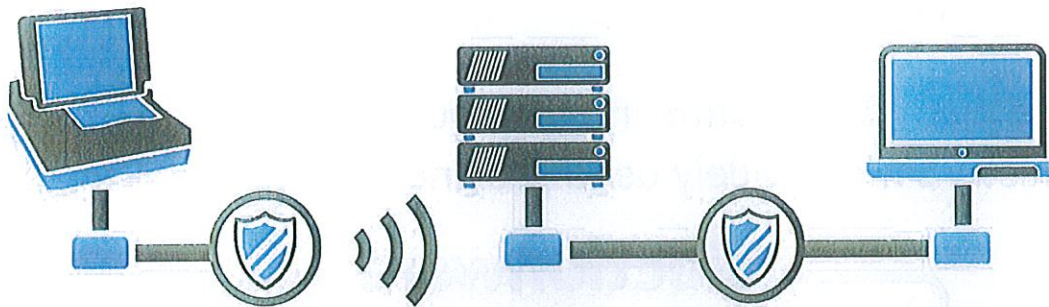
DS200 Achievements & Successes

Certification of Unity 3.4.0.0

ES&S is proud to introduce our pairing of the DS200® with the world's fastest, most precise digital central scanner -- DS850.® The suite enhances the DS200® and the AutoMARK® for voters with special needs.

This latest suite of software has set a new standard of usability for voters and election officials.

CERTIFIED
EAC
CERTIFIED

Newest Members of the ES&S Family

State of Maine
DS200® and AutoMARK®
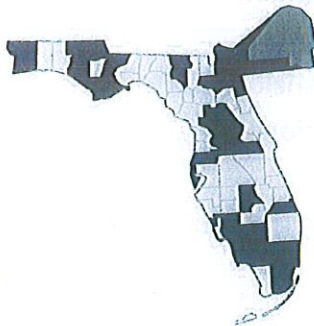
Duval County, FL
DS850,® DS200,® AutoMARK®

With more than **13,500 units** in use around the US, the DS200® is the industry's most widely used precinct digital scanner.

electionware™
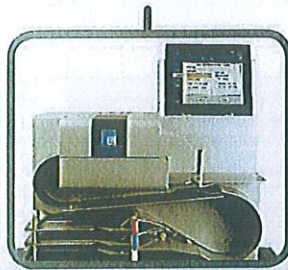
UNIVERSAL VOTING SYSTEM
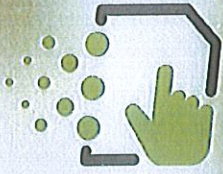
ExpressVote®

THE ES&S EXPRESSVOTE HANDLES IT ALL.

The ExpressVote Universal Voting System combines paper-based voting with touch screen technology to create an innovative breakthrough in voting solutions.

Used in early vote centers and on Election Day in precincts or vote centers, the ExpressVote handles the entire ballot-casting process. Election officials no longer have to guess the number of ballots to print — instead, an inexpensive Vote Session Activator™ card determines the ballot style presented on the touch screen.

ExpressVote can serve every eligible voter, including those with special needs. As a fully compliant ADA (Americans with Disabilities Act) voting solution, ExpressVote enables each voter to cast his or her ballot independently.

Choose Leading-edge Technology

KEY FEATURES

VOTE SESSION ACTIVATOR

The voter receives a voting session activator card to begin the process. Election officials can choose from three options:

- If only one ballot is programmed for the election, a blank card activates the ballot.
- If the election has multiple ballots, a blank card requires a poll worker to select the correct ballot for the voter.
- If the election has multiple ballots, a card with an activation barcode displays the correct ballot for the voter.

CASTING OPTIONS

The ExpressVote enables casting options. Voters can:

- Manually place ballots in the DS200 for scanning and tabulating.
- Use AutoCast® to place ballots into a secure container for later tabulation by an election official, who may use the DS850 central scanner and tabulator.

VERIFIABLE PAPER RECORD

After all selections are made, a human- and machine-readable paper record is produced, including text and an optical scan barcode. All votes are digitally scanned for tabulation on ES&S' DS200 and DS850 devices.

EASY TO SET UP AND USE

The one-step startup and poll-closing procedure makes the ExpressVote an ideal device for poll workers. The intuitive design offers streamlined simplicity for all voters, poll workers and election staff. The paper card is the vote session activator – there is no expensive technology to manage or program. The ExpressVote is small, lightweight at less than 20 pounds, and easy to carry.

CONTROLLED AND REDUCED COSTS

Traditional ballot printing costs can be reduced significantly by eliminating the need and expense for pre-printed paper ballots. With low operation and maintenance fees, budgeting for recurring expenses with the ExpressVote is easy. The system does not use ink, toner, or paper rolls and consumes 70 percent less paper than traditional ballots.

INNOVATIVE DESIGN

Complete and total independence is maintained while voters cast their own records. Voters review a summary page and can make changes before casting ballots. A voter's selection changes will not spoil the voting session. The system produces a verifiable paper record for each voter that is digitally scanned for tabulation. ExpressVote neither stores nor tabulates vote counts. The system is secure – the election definition media device is protected in a locked environment.
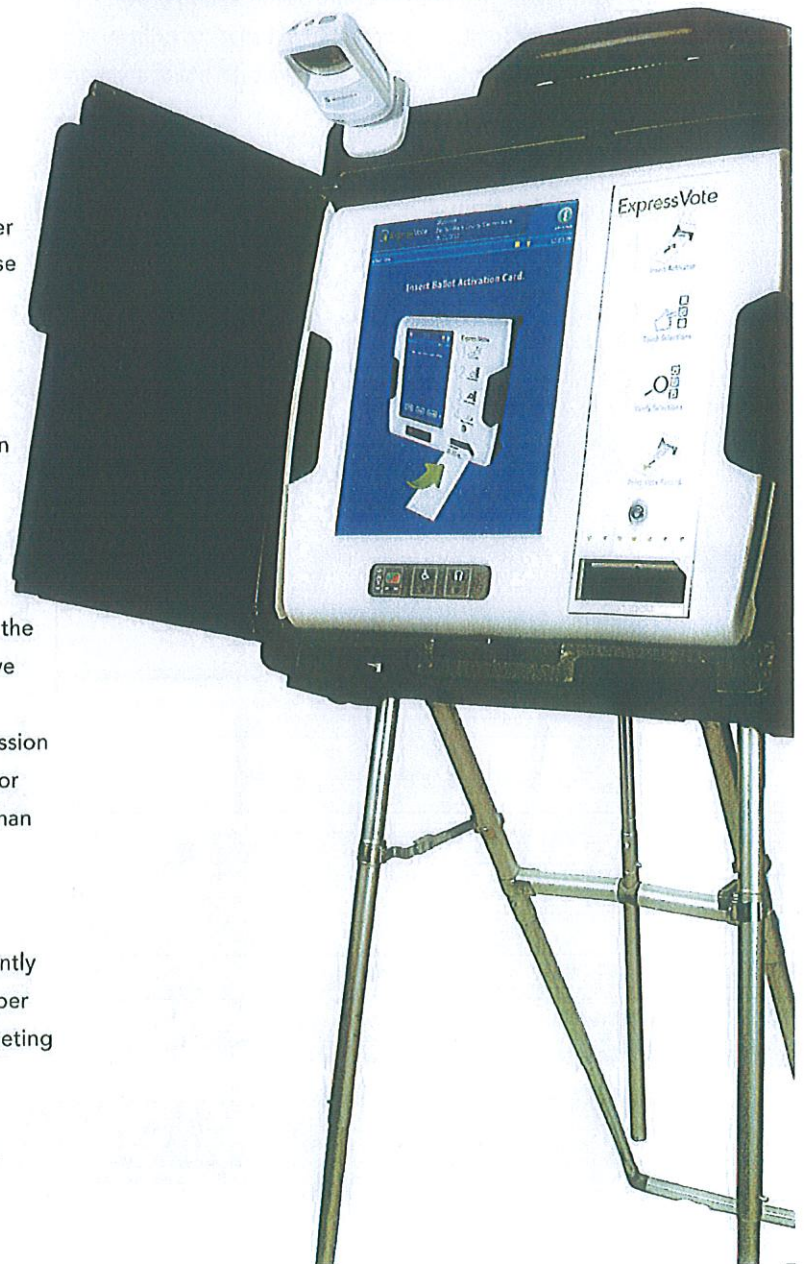
HIGH-SPEED SCANNER & TABULATOR

DS850®

THE DS850® - THE INDUSTRY LEADING HIGH-SPEED CENTRAL SCANNER AND TABULATOR.

The DS850 central scanner and tabulator is a high-speed digital ballot scanner and tabulator equipped with the latest ES&S technology to make your job easier. The DS850 system is the fastest central scanner in the industry. Fully certified and compliant with the latest federal Voluntary Voting Systems Guidelines, the DS850 enhances the voting experience for voters and election officials.

CERTIFIED VVSG 2005 CERTIFIED

CERTIFIED EAC CERTIFIED
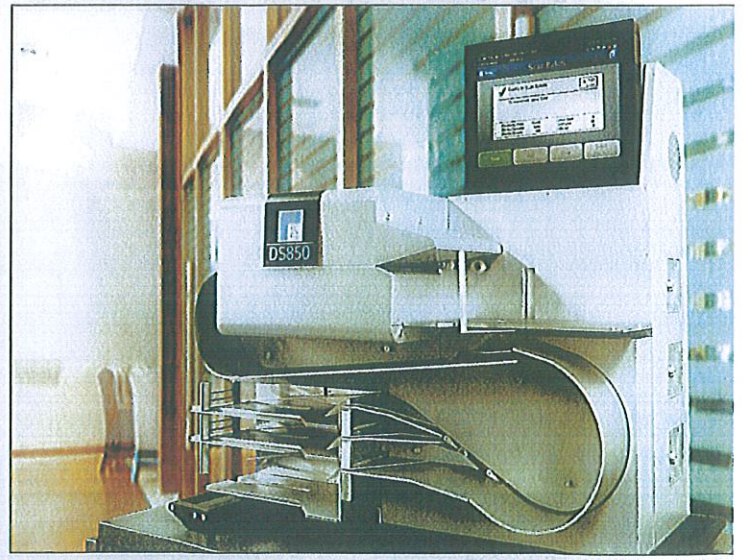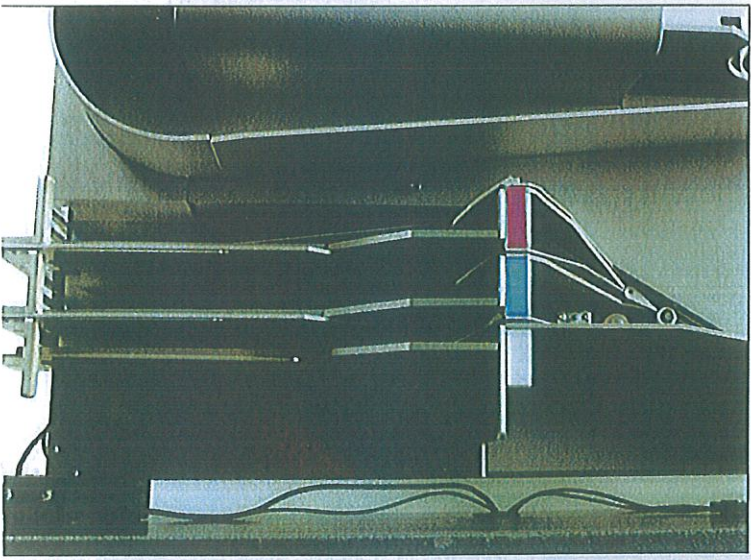
Enhance the Voting Experience

KEY FEATURES & BENEFITS

SPEED

The DS850 can scan ballots of multiple sizes and handle folded and roughed-up ballots with ease. For example, the system can scan 14-inch double-sided ballots at the rate of 300 per minute with next to no ballot jams. The DS850 is three times faster than any other digital scanner on the market.

EASE OF USE

The durable 15-inch color touch screen and user-friendly interface walk you through every step of the process.

FLEXIBILITY

With three separate sorter bins, you can determine whether you want to set apart specific types of ballots for further review. Let the DS850 handle separating write-in votes, over-votes, and blank ballots
– all without missing a beat.

SECURITY

Safeguard your election data with the DS850's system integrity, electronic audits, data encryption, and digital signatures. Nearly 35 years of election industry experience makes ES&S the vendor you can trust.

ACCURACY

ES&S' patented Intelligent Mark Recognition™ (IMR) and PTRAC™ technology ensure that ballots are read accurately and consistently, protecting voter intent and eliminating manual adjudication time.

PTRAC (Positive Target Recognition & Alignment Compensation) corrects for variations in ballot alignment and printing, allowing the digital scanners to zero in on the marking area. IMR then digitally subtracts the outline of the voting target to read only the voter's mark. Our competitors' optical scanners require you to set an arbitrary pixel threshold to determine what counts as a mark.

Instead, the DS850 does the work for you. To determine which marks were intentional, sophisticated algorithms analyze the mark's darkness (pixel density) and directionality. Unlike other scanners, the DS850 is not fooled by erasures or other stray marks.

Does the election require a recount? With the DS850, you get the same consistent and accurate results every time.

CERTIFIED VVSG 2005 CERTIFIED

CERTIFIED EAC UNITY 3.4.0.0

STANDARD FEATURES & ADVANTAGES

STANDARD FEATURES

- High resolution scanning technology
- Automatic detection of fraudulent ballots
- Ultrasonic multi-feed detector that prevents the device from accepting more than one ballot at a time
- Dual, removable commercial memory cards for redundancy
- Internal diverter for simplified ballot sorting
- Patented AuditMark® image technology

EAC CERTIFIED
VVSG 2005 VER. 1

DOMINION IMAGECAST® VOTING PRECINCT

DEMOCRACY SUITE®

BENEFITS

Dominion has invested in the development of proprietary technology that truly sets its products apart from the competition. Focusing on two key aspects of the electoral process – **risk-limiting auditing and voter intent** *– Dominion's technology improves the transparency and integrity of the election process.*

- **AuditMark® technology:** Each digital ballot image has an AuditMark® appended at the bottom, showing a record of how that ballot was interpreted by the tabulator on Election Day. Why bother purchasing a scanner if it can't tell you what it read?

- **Marginal Mark detection:** This feature makes it possible for voters to clarify their intent when they cast their ballot. Thresholds can be configured to jurisdictional requirements.

- **Complete end-to-end system auditability:** Every action taken on the tabulator and the election management system is recorded in a permanent, unalterable digital audit log.

- **Engineered simplicity:** Dominion's voting systems were designed to be easy-to-use for voters, poll workers and election officials.

PROVEN, PRACTICAL & SIMPLE

OVER **100,000** MACHINES IN USE

OVER **60,000,000** BALLOTS ACCURATELY READ

SUCCESSFUL IN ANY ENVIRONMENT

WHAT YOU NEED, WE DELIVER

EXPERTISE

Dominion team members are leaders in the industry in project management services and support for voting system implementations. With nearly 200 professional staff - including over 60 individuals dedicated to Customer Service & Delivery - **and over 2,000 years in combined elections experience**, Dominion has the expertise to deliver on all your election needs.

EXPERIENCE

Dominion staff leverage their broad implementation experience with Dominion, Sequoia as well as Premier/Diebold product lines to deliver the best professional services in the industry. This cornerstone in project management has been the key to success of voting system implementations ranging in scale from large statewide projects to small scale election events. **As a Dominion customer, you know you can rely on Dominion's state-of-the-art technology, vast engineering resources and expertise** - all of which are mobilized to ensure that your needs, and those of your voters, are fully met.

While an accessible voting session is on-going with a voter using an audio ballot and ATI to vote, another voter is casting their ballot.

← up to 10-15 ft. →
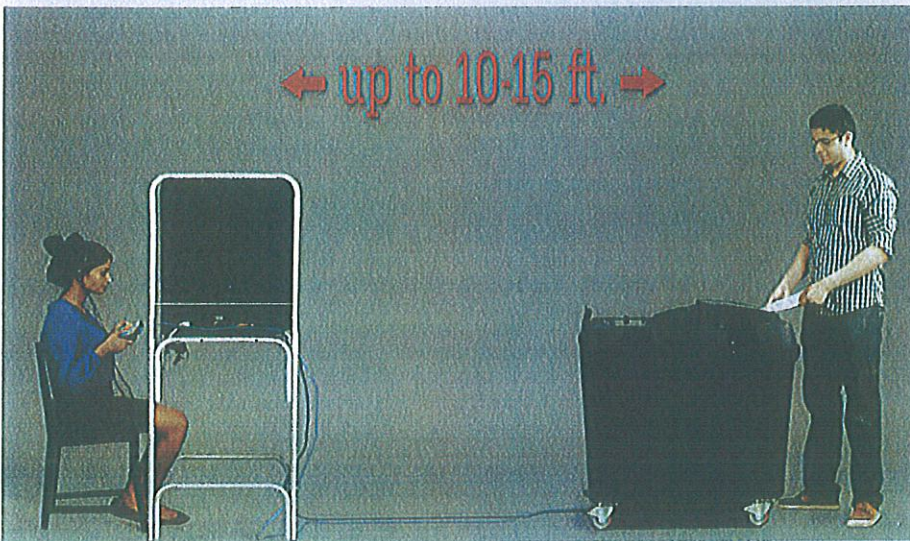
DOMINION CUSTOMER SERVICE & SUPPORT

- Planning & Scheduling
- Overall Change Control Process
- Project Scope Management
- Resource Planning
- Quality Control

- Risk Management
- Resource Management
- Equipment Procurement & Deployment
- Customer Interface & Communications
- Training Management

STATE-OF-THE-ART TECHNOLOGY, EXPERTISE & EXPERIENCE.
DEDICATED TO MAKING YOUR ELECTION A SUCCESS.

DESIGNED AROUND CUSTOMER FEEDBACK

Today, voters and election officials are increasingly looking to leverage everyday technologies to improve the voting process and experience.

We listened to you, and designed a tablet-based precinct voting terminal which combines the flexibility, efficiency, and simplicity of modern technology, with an underlying platform of security and performance - Dominion's robust and reliable Democracy Suite®.

FLEXIBLE

BUILT WITH SUSTAINABILITY IN MIND

Takes advantage of the latest cutting-edge technology and industry-leading tablet devices, making our system modular and scalable.

Uses compact tablets that are cost-effective, easy to store, maintain and deploy when space is at a premium.

Provides a range of accessible input options for tablet voting, giving voters with accessibility needs the ability to vote privately and independently.

EFFICIENT

DESIGNED FOR EFFICIENCY

A software-based system designed around a robust Election Management System and a single database for all critical pre-election and post-election tasks.

Simplifies Election Day deployment.

Lowers the total cost of ownership by reducing reliance on proprietary hardware.

Includes all the tools needed to simplify and streamline the election process, saving time and reducing workload.

The tablets can be leveraged for other uses by the County.

SIMPLE

ENGINEERED SIMPLICITY

Reduces complexity for election officials, with all voting channels and results tabulation taking place out of a single, unified database.

Voters and poll workers interface with simple, commonly used technology - improving the voting process and experience.

SECURE

STATE-OF-THE-ART SECURITY

Encryption and security protocols are designed to meet the drafted Next Iteration requirements of the VVSG.

Preserves transparency through complete end-to-end auditability of the entire system.

Extensive internal security monitoring to ensure data integrity and maintain public confidence.

Creates a digital image of every ballot scanned and appends each with our industry-exclusive ballot-level audit trail, the AuditMark®.

Please contact us for more information:
sales@dominionvoting.com
1.866.654.VOTE

EXPLORE THE DOMINION DIFFERENCE

TO LEARN MORE ABOUT OUR TECHNOLOGY, PEOPLE AND SERVICES
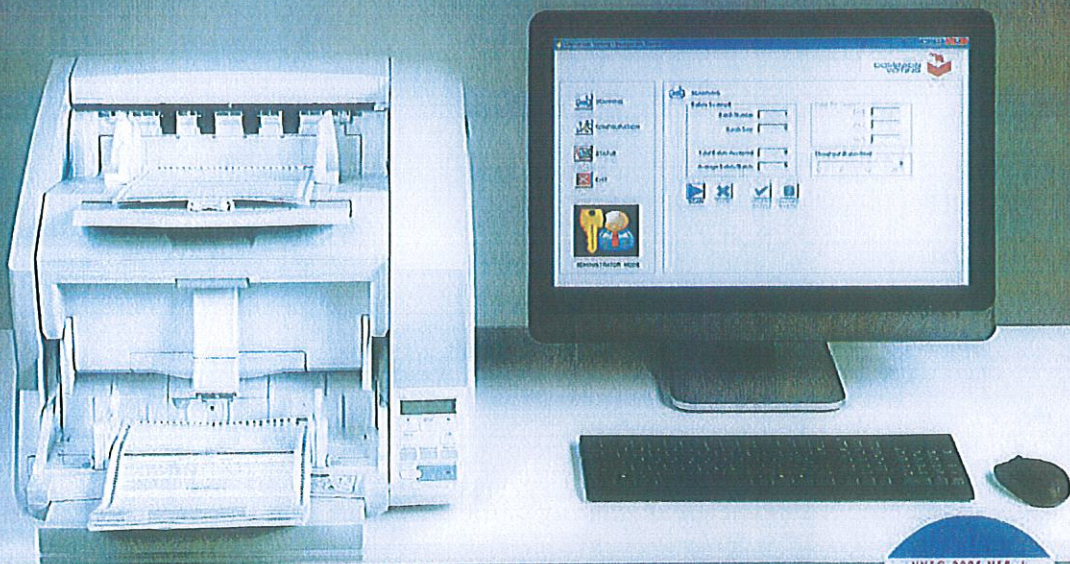VISIT DOMINIONVOTING.COM TODAY

DOMINION VOTING

Our customers come first.

STANDARD FEATURES & ADVANTAGES

STANDARD FEATURES

- **Scalable and affordable, no matter the size of the jurisdiction:**
  - One ImageCast® Central commercial scanner can process roughly 4,000 ballots per hour, or 28,000 ballots in a day.
  - Adding multiple commercial scanners increases efficiency without breaking the bank.

- **Engineered simplicity:**
  - The operator loads a batch and presses "scan" - simple!
  - When the batch is complete the operator presses "accept" - easy!

- **Manual, automated or digital out-stacking:**
  - The software allows users to select and sort ballots that need to be reviewed; such as over-votes, under-votes, blank ballots, blank contests, marginal marks, and write-ins.
  - The out-stacked ballots can be automatically sent to ImageCast® Adjudication for digital review.
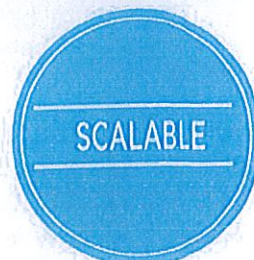
BENEFITS

Dominion has invested in the development of proprietary technology that truly sets its products apart from the competition. Focusing on two key aspects of the electoral process – risk-limiting auditing and voter intent – Dominion's technology improves the transparency and integrity of the election process.

- **AuditMark® technology:** Each digital ballot image has an AuditMark® appended at the bottom, showing a record of how the voter's intent was interpreted by the tabulator. Why bother purchasing a scanner if it can't tell you what it read?

- **Marginal Mark detection:** This feature identifies ballots with marginal marks. The system digitally out-stacks them, so that voter intent can be clarified. Thresholds can be configured to jurisdictional requirements.

- **Complete end-to-end system auditability:** Every action taken on the tabulator and the election management system is recorded in a permanent, unalterable digital audit log.

- **Engineered simplicity:** Dominion's voting systems were designed to be easy-to-use for end-users and election officials.

EAC CERTIFIED

DOMINION IMAGECAST VOTING CENTRAL

DEMOCRACY SUITE®

PROVEN IN ELECTIONS BIG & SMALL

SCALABLE

COST-EFFICIENT

WHAT YOU NEED, WE DELIVER

SCALABLE & FLEXIBLE TO MEET THE NEEDS OF JURISDICTIONS LARGE & SMALL
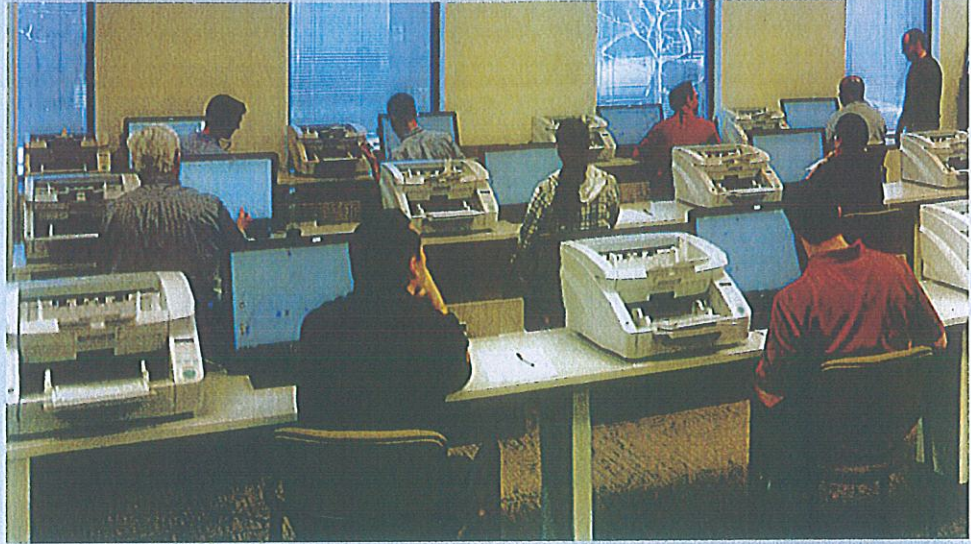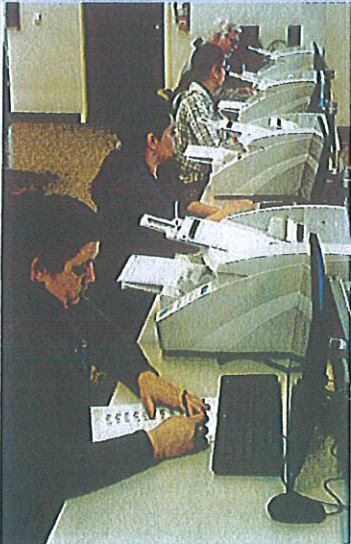
DIFFERENT CAPACITY HARDWARE FOR UNIQUE CUSTOMER NEEDS

● ● ● SCANNER OPTIONS ● ● ●

Ask us about the hardware options available for your jurisdiction.

CANON
DR-X10C

OR

CANON
DR-G1130

OR

CANON
DR-M160

SIMPLE

FLEXIBLE

A TRIED & PROVEN SYSTEM DESIGNED AROUND CUSTOMER FEEDBACK & BACKED BY OUR DEDICATED DOMINION TEAM

STATE-OF-THE-ART TECHNOLOGY, EXPERTISE & EXPERIENCE.
DEDICATED TO MAKING YOUR ELECTION A SUCCESS.

ImageCast® Central: A Scalable System to Meet Your Specific Needs

ImageCast® Central is the most cost-effective system which offers efficiency, scalability and flexibility; no matter the size or complexity of the jurisdiction.

🔒 SECURE

STATE-OF-THE-ART SECURITY TO SATISFY THE NEEDS AND EXPECTATIONS OF VOTERS, AND FOR YOUR ADDED PEACE OF MIND

EAC VVSG 2005 certified, featuring the highest security standards - with symmetric and asymmetric encryption - while preserving transparency through end-to-end system auditability.

Integrated ballot security features.

Encryption and security protocols are designed to meet the drafted Next Iteration requirements of the VVSG.

Extensive internal security monitoring to ensure data integrity and maintain public confidence.

➤ EFFICIENT

SPECIFICALLY DESIGNED TO HELP YOUR ELECTION RUN EFFICIENTLY

Uses compact commercial scanners to offer high sustained throughputs and worldwide access to a vast pool of readily available replacement parts and certified technicians.

AuditMark® ballot image auditing capability retains a secure digital image of every ballot cast in your election.

Meets EAC VVSG 2005 standards.

💡 SIMPLE

ENGINEERED SIMPLICITY

Modular and scalable to any size election.

Flexible with site layouts when space is at a premium.

Can be used in conjunction with ImageCast® Adjudication digital ballot review application.

Seamless integration with Dominion's Democracy Suite®.

Please contact us for more information:
sales@dominionvoting.com
1-866-654-VOTE (8683)

EXPLORE THE DOMINION DIFFERENCE

Unisyn Voting Solutions®

OpenElect® Voting Optical Scan (OVO)

Leading Innovation in the Election Industry

Unisyn OpenElect® Voting Optical Scan (OVO) is a comprehensive and secure paper-based digital optical scan voting system that both validates and tabulates ballots at each precinct.

Supports Ranked Choice Voting (RCV)

- Familiar runoff process done in a single election
- Works equally well when there are multiple seats to fill
- Combines two elections into one, so voters only have to make one trip to the poll

Integrity, Confidence and Flexibility

- 2005 Certification of the Voluntary Voting System Guidelines (VVSG) from the United States Election Assistance Commission (EAC)
- Hardened Linux and Java platform provides multiple layers of security and flexibility

High levels of Physical and Software Security

Physical measures, coupled with comprehensive procedures, ensure proper and effective security and integrity during equipment preparation, testing, repair and use.

Transparent System that Supports Accountability

- Reviewed by an EAC-accredited Voting System Testing Laboratory (VSTL)
- Lab reports are made public as part of our transparent process
- Software code is disclosed as part of a procurement process with a jurisdiction

## OVO Features and Benefits

- Self contained ballot counter includes a full color touch screen display, ballot scanner, and precinct report printer
- Provides the voter easy to follow onscreen instructions for all valid operations
- Scans ballots quickly
- Records and deposits ballots into a locked ballot box
- Prints reports and receipts
- Modular design and compact size provides easy transport and set-up

Scalability • Transparency Flexibility

- Pre Election Support
- Results Reporting
- Media Support
- Voter Education
- Administration Management
- Technical Support
- Maintenance
- Printing
- Supplies

OpenElect Voting Optical Scan (OVO)

OpenElect Voting Interface (OVI)

OpenElect Voting Central Scan (OVCS)

OpenElect Central Suite (OCS)

Flexibility in Program Design and Support Services

Resources, best practices and leading-edge technology provides our clients with the skills and tools needed to revolutionize local elections.
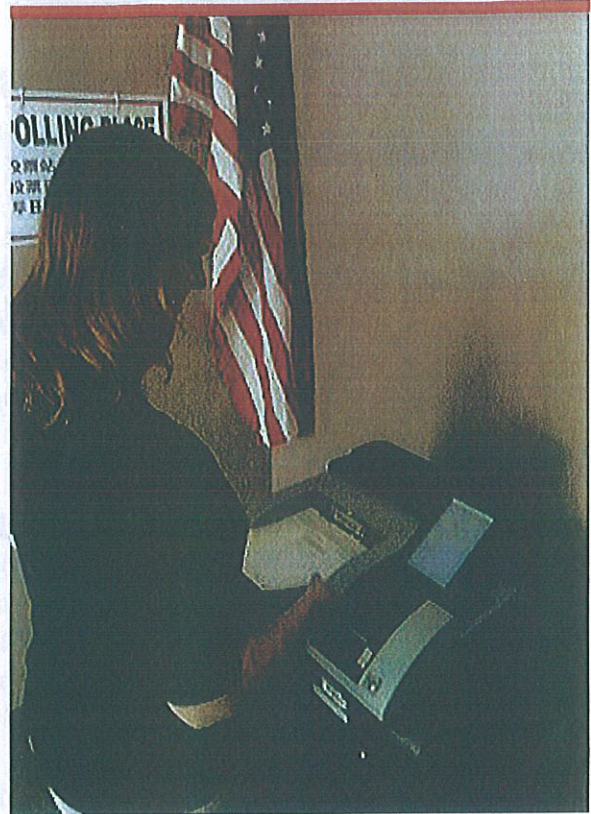
"Four letters describe Unisyn Voting Solutions - SAFE: Secure, Accurate, Flexible and Easy ... No wonder that they're causing such a stir in the election community. The Unisyn OVO will change the way elections are managed in both the public and private sectors."

Unisyn Voting Solutions® is a different kind of company! Embracing the standards set forth by the voting community, we are the *first* Company to offer a digital optical scanning system certified to the 2005 Voluntary Voting System Guidelines set forth by the U.S. Election Assistance Commission (EAC).

Our products provide a wide array of choices in selecting a voting system. Contact our Election Specialists today to learn more!

Unisyn Voting Solutions®

Innovative and Versatile

2005 VVSG Certified

ADA

Early Voting

Ranked Choice Voting

Java and Hardened Linux Platform

OpenElect® Voting Interface™ Vote Center (OVI-VC™)

OpenElect® Voting Interface™ Vote Center (OVI-VC™) provides touch screen voting to accommodate voters in an early vote center and multiple precinct vote locations. Fully HAVA compliant; each OVI-VC prints on demand a ballot which may be reviewed by the voter prior to being scanned. Secure tabulation is then completed using the OpenElect® Voting Optical Scan (OVO®) or the OpenElect® Voting Central Scan (OVCS®).

Americans with Disabilities Act (ADA) Features

- HAVA compliant keypad, sip-n-puff, zoom-in ballot and multi-lingual audio functionality

  - Allows voters to prepare ballots independently and privately
  - Allows voters to correct mistakes (second chance voting)

Early Voting/Vote Centers

- Contains all ballot styles to accommodate non-geographical use at early voting locations
- May be used for write-in candidates when required
- Ballots are printed in easy to read format for review by Voter before tabulation

Transparent System that Supports Accountability

- Fully reviewed and certified by an EAC-accredited Laboratory
- Lab Reports are public as part of our transparent process
- Software code is disclosed for review as part of a procurement process with a jurisdiction
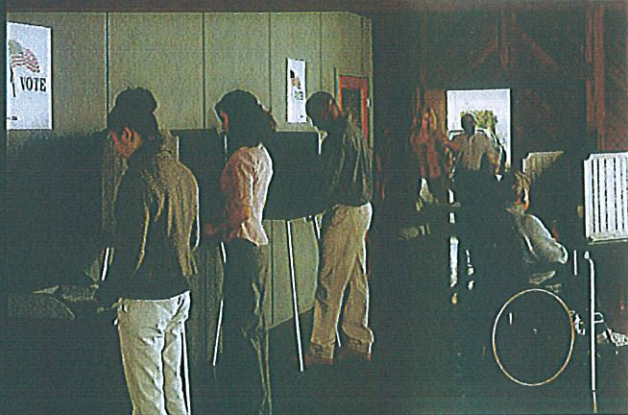
High Levels of Physical and Software Security

Physical measures, coupled with comprehensive procedures, ensure proper and effective security and integrity of equipment during preparation, testing, repair and use.

Flexibility in Program Design and Support Services

Resources, best practices and leading-edge technology provides our clients with the skills and tools needed to efficiently conduct elections.

OVI-VC™ Features and Benefits

- Supports multiple languages
- Rank Choice Voting (RCV)
- Modular design provides easy transport and set up for poll workers
- Ballots are printed in easy to read format for review
- Produces complete precinct audit logs and reports
- OVI-VC™ produced ballots can be easily scanned into the OpenElect® Voting Optical Scan (OVO®) or the OpenElect® Voting Central Scan (OVCS®)
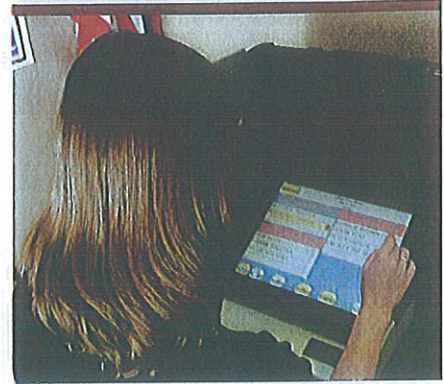
"Unisyn's products are easy to use and their ability to customize a program that is good for our jurisdiction is exceptional. The entire company is focused on making sure our elections are successful."

Unisyn Voting Solutions® is the *first* Company to offer a digital optical scanning system certified to the 2005 Voluntary Voting System Guidelines set forth by the U.S. Election Assistance Commission (EAC).

Our OpenElect® suite of products provides a wide array of equipment choices which allows us to provide the perfect match for the way you want to conduct your elections. Contact our Election Specialists today to learn more!

EAC CERTIFIED

Unisyn Voting Solutions®

OpenElect® Voting Central Scan (OVCS)

Innovative and Versatile

2005 VVSG Certified

ADA

Early Voting

Ranked Choice Voting

Java and Hardened Linux Platform

The OpenElect® Voting Central Scan (OVCS) resides at election headquarters. It is a bulk scanner designated to read absentee and provisional ballots, and to perform recounts. The OVCS also captures Write-In data images and produces a Write-In image report for manual processing upon request.

Enhanced Speed and Security

- Hardened Linux/Java multi-tiered platform provides enhanced security
- Transparent source code – available for review as part of a jurisdiction's procurement process
- Capable of uploading results directly to the tabulator without intermediate steps

Multifaceted, Flexible and Comprehensive

- Accommodates Ranked Choice Voting (RCV)
- Provides a permanent record of voter choices
- Captures full ballot images
- Extracts write-in entries from ballots and presents consolidated reports for each contest by precinct
- Can be used for central tabulation and recounts

High levels of physical and software security

Physical measures, coupled with comprehensive procedures, ensure proper and effective security and integrity during equipment preparation, testing, repair and use.

"When It Came To Innovation, Unisyn invested to retool the traditional election technology; adopting a new business model and nurturing a support network of peer- reviewed trusted third parties, industry authorities and skilled workers. And the change, led to the renaissance of an entire industry."
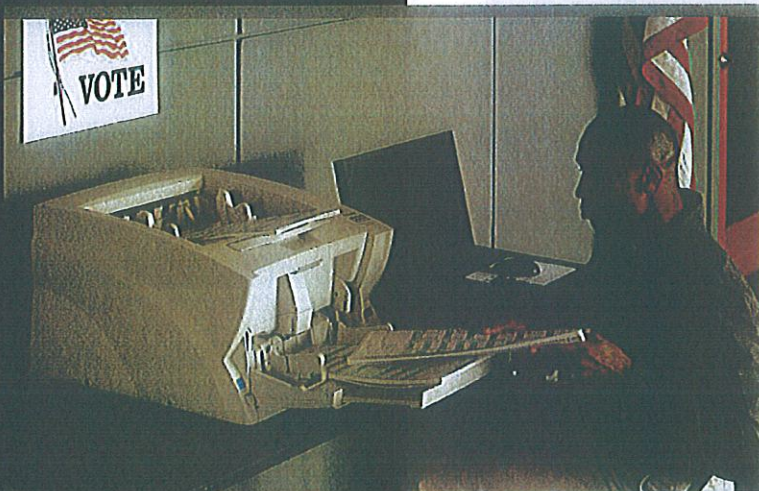
Questions?

Please visit: www.unisynvoting.com
Call: 1-760-734-3233
Email: marketing@unisynvoting.com

Scalability • Transparency Flexibility

- Pre Election Support
- Results Reporting
- Media Support
- Voter Education
- Administration Management
- Technical Support
- Maintenance
- Printing
- Supplies

OpenElect Voting Optical Scan (OVO)

OpenElect Voting Interface (OVI)

OpenElect Voting Central Scan (OVCS)

OpenElect Central Suite (OCS)

Adjudication

Provides adjudication whereby a qualified group is allowed to review error conditions on a ballot and adjust the ballot record according to the voter's perceived intent.

The OVCS allows for:

- Casting of ballots that cannot be read through system due to defacement of ballot
- Resolution of overvote/undervote conditions on a ballot
- Provides all-electronic handling of write-ins (without manual sorting)
- Provides method for visual validation of system function

Flexibility in Program Design and Support Services

Resources, best practices and leading-edge technology provides our clients with the skills and tools needed to efficiently conduct local elections.
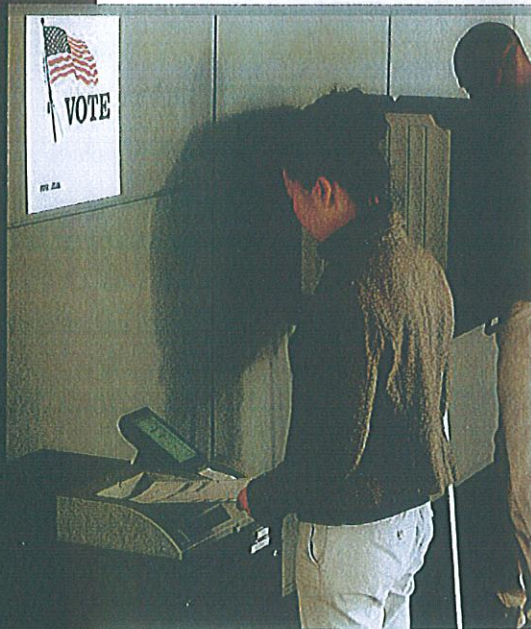
Features and Benefits

- Units can be scaled, depending on number of ballots
- Flexibility to read various ballot sizes and two-sided ballots
- Capable of uploading results directly to tabulation without the need for intermediate steps

Unisyn Voting Solutions® is a different kind of company! Embracing the standards set forth by the voting community, we are the *first* Company to offer a digital optical scanning system certified to the 2005 Voluntary Voting System Guidelines set forth by the U.S. Election Assistance Commission (EAC).

Our products provide a wide array of choices in selecting a voting system. Contact our Election Specialists today to learn more!

Appendix III

Review Committee

ELECTION SYSTEMS UPDATE

April 4, 2017

From:	Caldwell, Roland
Sent:	Monday, August 22, 2016 2:02 PM
To:	Moore, Brenda; Douglas Jones; Hirst, Matt; Holst, Diane; Renkes, Jeffrey; Michael Angelos; Kurylo, Peter; Bauer, Richard; Rik Shannon; Moritz, Roxanna; Caldwell, Roland; Ted Breckenfelder
Subject:	FW: Comments on Election Equipment

Here are Diane's comments.

-----Original Message-----
From: Bauer, Richard
Sent: Thursday, August 18, 2016 11:47 AM
To: Caldwell, Roland
Subject: FW: Comments on Election Equipment

-----Original Message-----
From: Holst, Diane
Sent: Thursday, August 18, 2016 11:20 AM
To: Moritz, Roxanna
Cc: Bauer, Richard
Subject: Comments on Election Equipment

Hello, Roxanna. First I want to thank you for the invitation to sit in on the demonstrations with your organization. For what it's worth, here are my observations about the products presented.

Dominion's feature of an explanation of how it judged each vote was something the other two vendors did not have.

ES&S's vote sorter seemed to be a superior product to Dominion's and Unisyn's scanner sorters. IT SORTS. The fact that those using the scanners had to "count up or down" in a stack to review a ballot was a minus.

ES&S and Unysyn offered to buy back equipment, a plus for them.

ES&S had a better battery life and temperature tolerance, which puts them above the others on that point.

I question Unysyn not having battery backup.

ES&S, the scanner itself was a smalller package, and should we be in a situation of lack of storage for temperature/humidity sensitive equipment, their unit (separated from the bin), will take up less space.

The ES&S was far easier to use for the poll worker.

Unisyn's and Express Vote printed on blank stock, so a similar plus, but the Express Vote is smaller (back to the storage issue).

Unisyn's need for the five digit code on the ADA device appeared to me to be something not needed by the others??? I wasn't totally following that whole process.

Regarding product support, I encouraged Richard to contact one of the counties with ES&S (Linn, Blackhawk, Waterloo, or Clinton) and get their input. Richard seemed to have to some past experience, and I would like him to feel confident.

My vote based on features is ES&S. Price to be taken into consideration at some point.

Diane

Sent from my iPad

From:	Jones, Douglas W <douglas-w-jones@uiowa.edu>
Sent:	Monday, August 22, 2016 2:25 PM
To:	Caldwell, Roland
Subject:	Re: Election Equipment Demos

I've had the time to digest my thoughts about the voting machines we saw and forwarded them to several people, but given what you just forwarded, it seems sensible to send this your way too (and you may forward these thoughts if you want).

If only it was OK to mix and match, you could get a very nice voting system out of this. Unfortunately, mixing and matching is not an option. Voting systems are certified as systems, and you can't just plug and play.

Overall, my comments tend to agree with what you forwarded from Diane Holst and Matt Hirst, and we seem to have reached our conclusions in similar ways.

In the following + and - marks indicate whether each comment is positive or negative. Comments are sorted by vendor.

DOMINION

+ The Dominion ImageCast ICP system gets a plus for its "audit mark" that it appends to the image of each scanned ballot explaining the basis on which it judged each mark instead of merely saying the mark was or was not a vote.

-- The ImageCast ICE and ATI seem difficult for the pollworkers to use. I found the pollworker instructions for the ICP/ATI combination here:
-- https://www.pdffiller.com/en/project/74143924.htm?f_hash=cbb446

+ The attention Dominion gave to the problem of voter privacy with ballots marked with the ICE and ATI strikes me as cute. The AutoMARK could have tried to make marks that looked hand-made a decade ago, but nobody thought to do so. Clearly, the miniature ballots printed by the competitor's accessible voting systems make it obvious which ballots were cast on the accessible machine, and that makes the right to a secret ballot difficult in precincts where there is just one voter who uses the accessible system.

-- The off-the-shelf central-count tabulator does not sort. Stopping the tabulator after each write-in ballot and displaying an instruction to the operator about how to find the problem ballot and what to do with it is a real hassle. (We're going to see huge numbers of write-in votes in this fall's presidential election (Bush, Sanders, you name it), and it could happen in future elections.)

+ The use of an off-the-shelf high speed scanner is nice, and the option to lease or purchase the scanner from someone else is unexpected. You're stuck with a specific make and model of scanner, but you aren't stuck using Dominion or Election Source as a middle man for that component of the system.

ES&S

++ The ES&S Express Vote ballot marking device looks easy to use, and the fact that it prints on blank ballot stock can be a real plus, giving polling places insulation against running out of pre-printed ballots. (Iowa's emergency paper ballot law is pretty good, but hand counting improvised ballots is no fun at all when the polls close.)

- If any voter votes on the Express Vote, their ballot will stand out from the others, so you need a polling place procedure where, once some voter uses it, pollworkers should request that some other voters also use it until enough have done so that the vote cast on that machine doesn't stand out. This is a weak minus.

++ The central-count scanner sorts; this is a big improvement over prior ES&S scanners (although back in the 1970's, the Westinghouse W600 ballot scanner had a sorter -- ES&S started as something of a Westinghouse spinoff, and they still have senior people there who remember that machine.)

UNISYN

- The OVO ballot scanner doesn't have a battery. Yes, there's an emergency compartment in every ballot box, so we can live with problems here. (I wish we had voting system vendors who designed systems you could power from jumper cables and a car battery. LibertyVote/Nedap offered such a system in the US for a while, but it never caught on.)

- The lack of a sorter in the OVO bothers me. Yes, you can look at images of write-in votes in order to evaluate them, but you ought to be able to look at the ballots themselves in the event that questions are raised about the integrity of the software. There are lots of people who know how to photoshop images!

- The OVO ballot scanner uses starter and ender cards, a strange holdover from the AccuVote OS that is itself a strange holdover from the Votomatic punched-card system. Almost any other approach to opening and closing the polls makes more sense than this.

++ the OVI VC, like the Express Vote, prints on blank ballot stock, offering some protection against running low on ballots.

- the OVI VC is a bit clunkier than the Express Vote.

- the OVI VC, like the Express Vote, creates the need for precinct procedures to protect the voter's right to a secret ballot.

-- the off-the-shelf central tabulator does not sort, as with Dominion.

+ but as with Dominion, it's an off-the-shelf high-speed scanner.

GENERAL COMMENTS

I was surprised at the informal quotes of prices for off-the-shelf high-speed scanners. Something that sits comfortably on a table top costs half the price of a comfortable house! I was surprised that ES&S special purpose ballot scanners can compete in price with the off-the-shelf scanners, even though they have the added complexity of sorters.

Some of the vendor presentations used words like "military grade encryption." I know some great cryptographers who are deeply involved in issues of national security, and they emphatically deny that there is such a thing. You should interpret that phrase the same way you would interpret a car salesman's claims about the security of the door locks.

I was pleased to see the Automark is being replaced by lightweight and less expensive alternatives.

I can't set priorities for Scott County. A + mark in my comments above does not necessarily balance a - mark because I cannot tell you how to value, for example, handicapped accessibility versus precinct-worker friendliness, or voter privacy versus ballot printing costs.

That said, if I had to pick a vendor from among these three right now, I'd probably pick ES&S. I'm not sure you should listen to that gut reaction, though.

From:	Caldwell, Roland
Sent:	Monday, August 22, 2016 2:01 PM
To:	Moore, Brenda; Douglas Jones; Hirst, Matt; Holst, Diane; Renkes, Jeffrey; Michael Angelos; Kurylo, Peter; Bauer, Richard; Rik Shannon; Moritz, Roxanna; Caldwell, Roland; Ted Breckenfelder
Subject:	FW: Election Equipment Demos
Attachments:	Election Equipment Demo Notes.docx

Here are the thoughts of Matt Hirst regarding the election equipment demos. I will forward Diane Holst's reaction in a separate email. If you wish to share your reactions please send them to me and I will distribute to the advisory group. Thanks.

From: Hirst, Matt
Sent: Tuesday, August 09, 2016 4:19 PM
To: Moritz, Roxanna
Cc: Bauer, Richard; Caldwell, Roland
Subject: Election Equipment Demos

Roxanna:

Thank you for inviting me to the election equipment demonstrations! I have to say it was very informational and likely the best run demo day I've attended... Great job!

I took notes throughout the day and have attached them here in case they might be of use.

Overall I believe all three vendors are capable.

Having said that, in my opinion, ESS was the most capable for some of the following reasons:
- The high speed scan / tabulation solution was clearly the best
- The ESS high speed scan solution was the only one to sort ballots and was probably at least twice as fast
- The hardware seemed less complicated to run and setup
- The hardware seemed more ruggedized
- The hardware was better suited for the storage currently available at the County
- ADA functionality was more technically advanced with QR code scan capability

Clearly financials aren't factored into the opinion above... Customer service, experience, and references would also need to be evaluated in making an informed final selection...

If there is anything I can do to be of further assistance through this process, please let me know!

Thank you;

Matt

Matt Hirst Director
Scott County Information Technology
400 West Fourth Street
Davenport IA 52801-1104
(563) 328-3261 · Office
(563) 940 5013 · Cell

1

Election Equipment Demonstration Notes - 8/9/16

- Questions / Notes:
  - Will Scott County be saving ballot images in the future?
  - What is the failure rate on CF cards?
  - Scott County has 63 precincts
  - Electronics should be stored where?
- Three (3) certified election equipment providers in Iowa
  - Election equipment is certified federally by Elections Assistance Commission (EAC) and by the state of Iowa

Election Source / Matt Parrott
  - Dominion Equipment
    - Nice directions on opening/closing polls (Scott County specific)
    - Ballots never have to go to two pages
    - Collapsible ballot boxes (saves storage)
    - Ballot box can separate write-in ballots for easier counting
    - Battery backup on tabulator (run ~ 2 hours without power)
    - Won't count a ballot with less than 5% filled in
    - Results have live built in HTML reports/output
    - Software is called "Democracy Suite" (SC would no longer use "GEMS")
    - Iowa law requires hand marked ballots for "Test Decks"
    - Uses compact flash cards
    - Tabulator uses two (2) cards for backup purposes
    - Equipment has built in surge protectors
    - Hardware is upgradeable (firmware, software) and as such a fifteen (15) year life expectancy is projected
    - Batteries are Lithium ION batteries in tabulators
    - High speed scan function uses COTS scanner (Canon)

Election Systems Software (ESS) – Omaha (Angie and Chris)

- Elections only business
- Manufactures their own equipment
- In business for 40+ years
- No VAR's – work directly with ESS
- In 48 States and conduct 51% of all elections nationally
- In 9 Iowa Counties, Lynn, Woodberry, Blackhawk
- DS200 – Precinct Scanner
  - Can be stored from 0 to 120 degrees without issue
  - Battery lasts ~ 4-6 hours (lithium ion replaced by vendor under maintenance plan)
  - 1 year warranty
  - USB storage (redundant)
  - Thermal paper (no spools)
  - ~$5500 before discounts
  - Ballots can be 11" to 19"
  - Very rugged
  - Moisture seals (in response to FL request)
  - Scanner can be dismounted and stored separately from ballot bin
  - Well-made device storage
- Express Vote (ADA voting device)
  - Replaces Automark
  - No consumables (Thermal ballot)
  - 19 lbs.
  - Battery backup (~4-6 hours)
  - Works with Precinct Atlas to print barcode for ballot style
    - Requires additional thermal printer
  - ~$3500
- DS850 High Speed Scanner
  - 5th generation
  - Sorts ballots
  - Fastest high speed scanner in world
  - ~8000 ballots per hours depending on process
  - $100k
- DS450 High Speed Scanner
  - Half the speed (~4000 per hour)
  - Half the price   (~$50k)
  - Sorts ballots

Unisyn (Mark and Dustin) Henry Atkins out of Clinton, MO

- Henry Atkins is Scott County's current vendor
- Cover IA, MO, and KS
- Also service Diebold
- Parent company is ILTS (lottery and on-track wagering)
- Unisyn is based out of Vista, California
- Equipment is assembled in US
- 60+ Counties in IA have the Unisyn system
- Will give trade in value on old election equipment
- Will do Poll Election Official PEO training sessions on new equipment
- OVO Tabulator
  - Takes 3.5 to 4 minutes to boot up
  - Automatically prints 0's report upon boot up
  - Thermal printers
  - No ribbons or ink
  - No battery backup on OVO
  - 3 memory devices
    - TM – transport media
    - 80 GB internal hard drive
    - Internal USB media
    - USB media has a 99% plus non-failure rate
  - 11" to 19" two sided ballot capable
  - ~$4800
  - Takes image of every ballot
  - Recommended to be stored in ~40 to ~100 degrees
  - Can open scanner to clean (with alcohol)
  - 1 year warranty
  - Maintenance fixed for 10 years
  - Parts are guaranteed for 10 years after end of production
  - Currently been on the market for 3.5 years
- OVI – ADA
  - Also 3.5 to 4 minutes to boot up
  - Also, automatically prints 0's report upon boot up (not a tabulator, but how many ballots were generated.)
  - Cannot over vote
  - Used for absentee voting in Story and other counties
  - Touch Screen
  - ~$3400
  - Compatible with sip and puff
  - Thermal printer / roll paper

- OVCS – High Speed Scanner
  - Uses COTS scanner (Canon)
  - Any orientation ballot feed
  - Doesn't sort out ballots
  - Has to stop per Iowa code for invalid and over vote ballots
  - 65 – 90 ballots scanned per minute depending on ballot/paper size (3900 -5400 per hour)
  - ~$50k
  - Requires counting back through ballots to pull invalid, over vote, and etc. ballots (Yuck!)
  - Election summary reports are modeled after GEMS (very similar to what we have today.)

From:	Shannon, Richard <rshanno1@dhs.state.ia.us>
Sent:	Monday, August 22, 2016 3:39 PM
To:	Bauer, Richard
Subject:	Election Equipment Demos

Thanks to you Richard and Roxanna for the invitation to sit in on the equipment demonstrations. I concur with much of what has already been said and don't know that I have much to add. I will say though, that having used and trained voters with disabilities to use both the AutoMARK and the Unisyn OVI, most have expressed a strong preference for what they see as the easier to use and more intuitive AutoMARK. With that quickly becoming less of an option for voters the machine that appears to most closely compare to the functionality of the AutoMARK is the ES&S Express Vote. I continue to have concerns about equipment that generates a unique ballot that may threaten the privacy of a voter but trust this could be addressed by training that encourages the use of accessible equipment by voters with and without disabilities. Best of luck with your decision.

Rik

Rik Shannon
Public Policy Manager
Iowa Developmental Disabilities Council
700 2nd Avenue, Suite 101
Des Moines, Iowa 50309
(O) 515-288-0443
(C) 515-689-2870

For:
Ad Hoc Advisory Committee for Selection of Election
Equipment in Scott County, IA

As a community member of the Ad Hoc Committee, I offer
these comments and recommendations:

Comments:

Since the 2000 election, I have observed (not locally)
irregularities, e.g. vote flipping, impossible vote totals,
lost ballots, election results/exit polls discrepancies,
etc. in every election, especially in the 2008 and 2012
campaigns in which I was heavily involved.

I've also viewed a number of documentaries and read a
number of books (see some sources below) on election and
voter fraud that are very alarming. I believe it's beyond
doubt that the fraud is rampant at the national level.

Even with vendor software available for review, there is no
method to determine if the software used on election day is
the software demonstrated. Douglas Jones confirmed this.

Recommendations:

1. Do not purchase any equipment that tabulates votes using
software that by its nature is insecure, breechable, error-
prone and secretive.

2. Hand-count paper ballots in full view of anyone who
wishes to observe. I realize the logistics challenges
involved.

3. Lobby our state legislators to revise Iowa Code to allow
the county commissioner of elections to perform election
audits at their sole discretion (Chapter 50 – *Canvass of
Votes*, Section 12 – *Return and Preservation of Ballots*
allows "sealed packages containing voted ballots...be opened
only for an official recount").

If electronic equipment is purchased:

4. Employ an impartial technical consultant to analyze the
system and its software for errors and security risks.

5. Require the vendor to certify that the demonstrated software is the election day software; and that the equipment is not able to receive data from any source.

6. Any equipment that fails after certification must remain out-of service until repaired and re-certified.

Sources:
1. SMITH, John, *Hacking Democracy* (DVD), HBO Productions.

2. EARNNHARDT, David, *Uncounted: The New Math of American Elections* (DVD).

3. HARRIS Beverly, *Black Box Voting: Ballot-Tampering in The 21st Century.* WA, Renton: Talion Publishing, 2004.

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   CA, Stanford: Center for the Study of Language and Information (CSLI), 2012.

5. WALDMAN DELOZIER, Abbe & KARP, Vickie, *Hacked: High Tech Election Theft in America, 11 Experts Expose the Truth.*
   TX: Austin: Truth Enterprises Publishing, 2006.

6. RUBIN, Aviel, *The Dirty Little Secrets of Voting Systems Testing Labs*, May 2011.
   URL: http://www.huffingtonpost.com/avi-rubin/the-dirty-little-secrets- b 12354.html

7. RUBIN, Aviel, *All Your Devices Can Be Hacked*, TED Talk, Oct 2011.
   URL:
   http://www.ted.com/talks/avi rubin all your devices can be hacked

   Aviel Rubin is a professor of computer science and director of the Health and Medical Security Lab at Johns Hopkins University. His research is focused on the security of electronic records, including medical and voting records.

8. CORRY, Charles, *Electronic voting - A national disgrace and evolving disaster*, Equal Justice Foundation newsletter, 10 Sep 2006.
   URL:
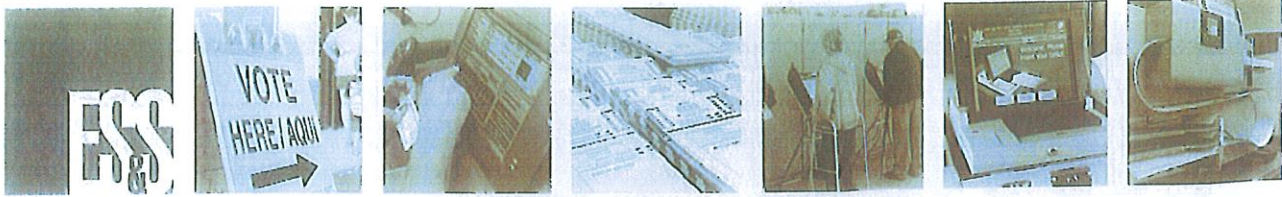   http://electiondefensealliance.org/2006/09/electronic voting a na tional disgrace and evolving disaster

Michael C. Angelos
Ad Hoc Committee
Community Member

Appendix IV

Vendor Quotes

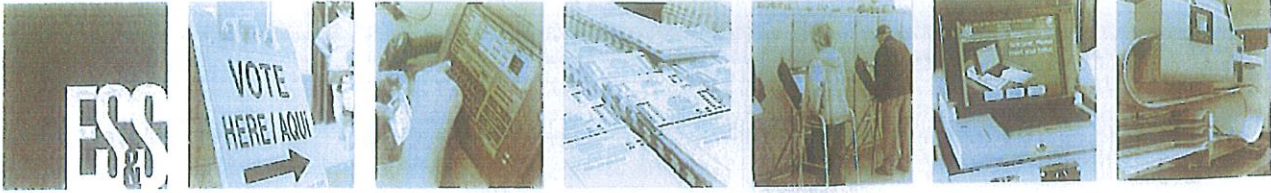**ELECTION SYSTEMS UPDATE**

April 4, 2017

Scott County Iowa
Purchase Proposal Quote
Submitted by Election Systems & Software

Purchase Solution Includes:

Quantity	Item Description	Price
	Tabulation Hardware	
	Model DS200 Precinct Scanner:	
68	Model DS200 (Includes Scanner, Plastic Ballot Box with Steel Door and e-Bin, Reverse Wound Paper Roll and 4GB Flash Drive)	$391,000.00
68	Tote Bin	$15,300.00
	Model DS850 High Speed Digital Image Scanner:	
2	Model DS850 (Includes Scanner, Steel Table/Cart, Start-up Kit, Dust Cover, Reports Printer, Audit Printer, Battery Backup, Two (2) USB Cables, and Three (3) 8GB Flash Drives)	$223,000.00
2	DS850 Initial Annual License Fee	Included
1	Installation/Training Fee (1st Unit)	$3,500.00
1	Installation/Training Fee (Each Additional Unit)	$1,000.00
	ExpressVote Ballot Marking Device:	
68	ExpressVote BMD Terminal (Includes Terminal, Internal Backup Battery, ADA Keypad, Headphones, 4GB Flash Drive and Power Supply with AC Cord)	$226,100.00
68	Soft-Sided Case	$11,900.00
	Software	
1	ElectionWare Software - Base Package - Reporting Only (ERM)	$5,250.00
1	ElectionWareResults (Web-Based Hosted Software)-County Level (Previously called Election Night Reporting)	Included
	Election Services	
1	Implementation Services (Does not include Coding, Voice Files or Ballots) 3rd Party Configuration and Installation - ES&S In-House	$1,300.00
2	Training Services: Equipment Operations Training Poll Worker Train-the-Trainer	Included
1	Software Training	Included
1	Election On-Site Support (One Event includes a person on-site the day before, day of, and day after election)	Included
X	Installation/Acceptance Testing	Included
X	1 Year Hardware and Software Warranty	Included
	Shipping & Other	
X	Shipping and Handling	$9,160.00
X	Customer Discount	($143,690.00)
	Trade-In Allowance. Equipment Being Traded-In by Customer Includes: 80-AccuVote OSX Scanner with Ballot Box 64-AutoMARK	($20,800.00)
	Total Purchase Solution	**$723,020.00**

Lease/Purchase Payment Information:	Annual Payment
Annual Payment for the 3-Year Term (Total of 3 Payments). Initial Payment Due at Contract Execution.	$241,006.67
Note: Annual payment amount reflects an interest rate of 0%	
Total Dollar Amount if Paid in Full at Contract Execution	**$674,706.21**

Scott County Iowa
Purchase Proposal Quote
Submitted by Election Systems & Software

Purchase Solution Includes:		

Quantity	Item Description	Price
	Annual Post-Warranty License and Maintenance and Support Fees	
	(Fees are Based Upon a 4-Year Customer Commitment to Subscribe to the Following Services)	
	Annual Post-Warranty Hardware Maintenance and Support Fees:	
68	HMA DS200 - Silver Coverage (Maintenance Once Every 24-Months)	$8,500.00
2	HMA DS850 - Silver Coverage (Maintenance Once Every 24-Months)	$5,050.00
68	HMA ExpressVote BMD - Silver Coverage (Maintenance Once Every 24-Months)	$6,630.00
	Annual Post-Warranty Firmware License and Maintenance and Support Fees:	
68	Firmware License - DS200	$5,440.00
2	Firmware License - DS850	$3,150.00
68	Firmware License - ExpressVote	$4,420.00
	Annual Post-Warranty Software License and Maintenance and Support Fees:	
1	ElectionWare Software - Base Package - Reporting Only (ERM)	$5,250.00
1	ElectionWareResults (Web-Based Hosted Software)-County Level (Previously called Election Night Reporting)	Included
	Total Annual Post-Warranty License and Maintenance and Support Fees	**$38,440.00**

Footnotes:
1. This quote is an estimate and is subject to final review and approval by both ES&S and the Customer.
2. Rates valid for 60 days and thereafter may change.
3. Any applicable (City & State) sales taxes have not been included in pricing and are the responsibility of the customer.
4. The quantity of service days reflects a reasonable estimate for implementation and selected ongoing election services. Quantities may change depending on specific Customer needs.
5. Customer is responsible for preparing and packaging the trade-in equipment for shipment. ES&S will coordinate and pay for the pickup of the trade-in equipment from Customer's site on a date to be mutually agreed upon by the parties.

ElectionSource MATT PARROTT
A Storey Kenworthy Company

Election Equipment Proposal Prepared For Scott County, Iowa

Proposal 2: *Precinct/Polling Place Option 2*

Note: Prices subject to change. This quote is based on current equipment list pricing as of:

Date: August 19, 2016

DESCRIPTION	QTY	UNIT PRICE	EXTENSION
Precinct Tabulation Hardware & Software			
ImageCast® Precinct (ICP) Audio Tabulators*	68	$3,900.00	$265,200.00
Each ICP Tabulator includes:			
- Built-In 4 Hour Battery			
- Built-In AuditMark & Dual Threshold Technology			
- Built-In Write-In Ballot Separator			
- Printer w/ Paper Roll			
- iButton Key FOB (1 standard & 1 Technical)			
- Two 4G Flash Memory Cards			
ADA BMD - One Tactial ADA User Interface			
ADA BMD - One InkJet Ballot Printer			
Large Volume Discount:	1		($13,260.00)
ICP Plastic Ballot Boxes: *Standard*	63	$1,000.00	$63,000.00
Large Volume Discount:	1		($3,150.00)
ImageCast® X (ICX) System ADA Touchscreen*	68	$3,100.00	$210,800.00
ICX includes:			
- Built-In 7 Hour Battery			
- Touchscreen			
- ADA System			
- Printer			
- Wheeled Carrying Case			
- 10 Access Cards			
- 1 Administrator Access Card			
- 1 Poll Worker Access Card			
(Not available until 2017 after it has been submitted to SOS)			
Large Volume Discount:	1		($10,540.00)
Election Management Software & Hardware			
Results Tallying & Reporting Software (RTR) EMS with Computer Server Level 4	1	$30,000.00	$30,000.00
EMS RTR Components/Peripherals	1	$0.00	$0.00
Implementation Services			
Equipment Acceptance Testing & Delivery**			
ImageCast® Precinct (ICP) Precinct Tabulators	68	$160.00	$10,880.00
ImageCast® X (ICX) ADA Touchscreen	68	$160.00	$10,880.00
Staff Democracy Suite RTR EMS Training** *(1 Day)*	1		$0.00
Staff Hardware Training** *(1 Day)*	1		$0.00
Pollworker Training** *(20 Students per Class)*	3		$0.00
EMS Computer Systems/Server Setup**	1		$0.00
Election Support Services			
Phone & On-Line Techical Election Support *(1 Year Included)*	1		$0.00
Phone & On-Line (EMS) Election Support *(1 Year Included)*	1		$0.00
Technician in area on Election Day *(First 2 Elections Included)*	1		$0.00
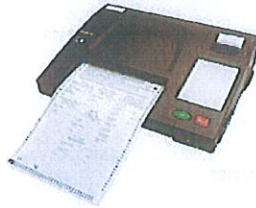
ElectionSource   MATT PARROTT
A Storey Kenworthy Company

DESCRIPTION	QTY	UNIT PRICE	EXTENSION
Trade-In Discounts			
AutoMark ADA Systems			
AccuVote OS Scanners			
Total	1	$21,000.00	($21,000.00)
Total			

Total Initial Cost		**$542,810.00**

*   **INCLUDES:** 12 Mo. Hardware Warranty & Software License
** **INCLUDES** : Transportation, Meals & Lodging

Ongoing Annual Fees			
Democracy Suite RTR License Per Year (after 1st year)	1	$5,000.00	$5,000.00
Democracy Suite RTR Phone and Internet Support (after 1st year)	1	$1,500.00	$1,500.00
Software Licenses - (after 1st year)			
ImageCast® X (ICX) ADA Touchscreen	68	$125.00	$8,500.00
Firmware Licenses - (after 1st year)			
ImageCast® Precinct (ICP) Precinct Voting Tabulators	68	$228.00	$15,504.00
Annual Maintenance Services (after 1st year)			
ImageCast® Precinct (ICP) Precinct Voting Tabulators	68	$225.00	$15,300.00
ImageCast® X (ICX) ADA Touchscreen	68	$210.00	$14,280.00
Total Ongoing Annual Fees			$60,084.00

_____   _____   _____
Acceptance of Contract Signature   **Title**   **Date**

ElectionSource MATT PARROTT
A Storey Kenworthy Company

Election Equipment Proposal Prepared For Scott County, Iowa

Proposal 3: AV Option

Note: Prices subject to change. This quote is based on current equipment list pricing as of:
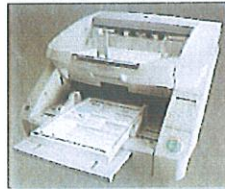
Date: August 19, 2016

DESCRIPTION	QTY	UNIT PRICE	EXTENSION
Precinct Tabulation Hardware & Software			
ImageCast® Central Count System (ICC)*	2	$25,000.00	$50,000.00
ICC includes:			
- Cannon Scanner 1130 (Model Number Subject to Change)			
- One I-Button Reader			
- Computer with Software			
- Central Count Tabulation Software System			
Back up ICC: *includes only the Cannon Scanner*	1	$7,820.00	$7,820.00
Implementation Services			
Equipment Acceptance Testing & Delivery**			
ImageCast® Central Count System (ICC)	3	$160.00	$480.00
Staff Democracy Suite RTR EMS Training *(1 Day)***	1		$0.00
Staff Hardware Training *(1 Day)***	1		$0.00
Pollworker Training *(20 Students per Class)***	1		$0.00
EMS Computer Systems/Server Setup**	1		$0.00
Election Support Services			
Phone & On-Line Techical Election Support *(1 Year Included)*	1		$0.00
Phone & On-Line (EMS) Election Support *(1 Year Included)*	1		$0.00
Technician in area on Election Day *(First 2 Elections Included)*	1		$0.00
Total			
		Total Initial Cost	**$58,300.00**

* **INCLUDES:** 12 Mo. Hardware Warranty & Software/Firmware License

** **INCLUDES :** Transportation, Meals & Lodging

Ongoing Annual Fees			
Software Licenses *(after 1st year)*			
ImageCast® Central Count (ICC)	2	$2,575.00	$5,150.00
Annual Maintenance Services *(after 1st year)*			
ImageCast® Central Count (ICC)	3	$1,500.00	$4,500.00
Total Ongoing Annual Fees			$9,650.00

Acceptance of Contract Signature	Title	Date

PROPOSAL FOR:	SCOTT COUNTY, IOWA			
Date	August 5, 2016			
Registered Voters	124,350			
Precincts/Poll Centers	63			
WITH UPLOAD ONLY MODULES	**BUDGETARY PROPOSAL**		**Retail Price**	**Contract Value**
Description		Unit/Hour	Unit Price	Extended Price
Hardware Products				
OVO		68	$ 4,790	$ 325,720
OVO carry case		68	$ -	$ -
OVI VC		68	$ 3,325	$ 226,100
OVI VC carry case		68	$ -	$ -
OCS Installed Dell Latitude Laptop				
EMS system		1	$ 2,250	$ 2,250
OpenElect Central Scan (OVCS)		3	$ 44,750	$ 134,250
TOTAL HARDWARE PRODUCTS				$ 688,320
OpenElect OCS Software License				
Tabulator Client (TC)		1	$ 43,587	$ 43,587
Tabulator				
Tabulator Reports (TR)				
TOTAL SOFTWARE				$ 43,587
Freight Charges		139	77	$ 10,703
Subtotal				$ 742,610
LESS: Trade allowance				$ (44,146)
LESS: Loyalty Discount				$ (82,773)
PROJECT - NET				$ 615,691
Annual License Fees				
(After One Year Initial License Expires)				
OCS License Fee		1	$ 8,717	$ 8,717
OVI VC license and firmware		68	$ 45	$ 3,060
OVO license and firmware		68	$ 75	$ 5,100
OVCS license and firmware		3	$ 250	$ 750
TOTAL ANNUAL LICENSE FEES				$ 17,627
Optional Warranty				
(After One Year warranty Expires)				
OVO warranty		68	$ 200	$ 13,600
OVI VC warranty		68	$ 155	$ 10,540
OVCS		3	$ 2,825	$ 8,475
TOTAL ANNUAL WARRANTY				$ 32,615

Appendix V

Commended Vendor Quote with Backup Flash Drives

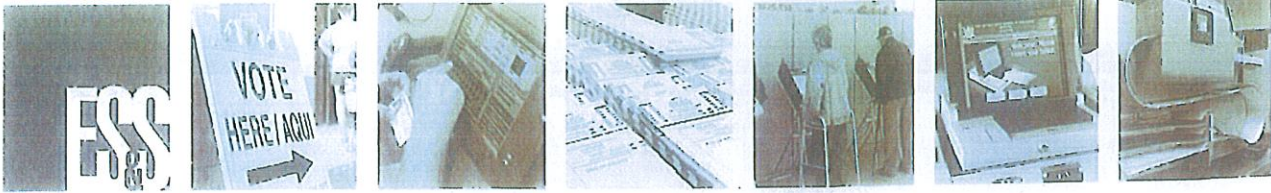**ELECTION SYSTEMS UPDATE**

April 4, 2017

Scott County Iowa
Purchase Proposal Quote
Submitted by Election Systems & Software

Purchase Solution Includes:

Quantity	Item Description	Price
	Tabulation Hardware	
	Model DS200 Precinct Scanner:	
68	Model DS200 (Includes Scanner, Plastic Ballot Box with Steel Door and e-Bin, Reverse Wound Paper Roll and 4GB Flash Drive)	$391,000.00
68	Tote Bin	$15,300.00
80	4GB Flash Drive (Additional)	$8,400.00
	Model DS850 High Speed Digital Image Scanner:	
2	Model DS850 (Includes Scanner, Steel Table/Cart, Start-up Kit, Dust Cover, Reports Printer, Audit Printer, Battery Backup, Two (2) USB Cables, and Three (3) 8GB Flash Drives)	$223,000.00
2	DS850 Initial Annual License Fee	Included
1	Installation/Training Fee (1st Unit)	$3,500.00
1	Installation/Training Fee (Each Additional Unit)	$1,000.00
	ExpressVote Ballot Marking Device:	
68	ExpressVote BMD Terminal (Includes Terminal, Internal Backup Battery, ADA Keypad, Headphones, 4GB Flash Drive and Power Supply with AC Cord)	$226,100.00
68	Soft-Sided Case	$11,900.00
	Software	
1	ElectionWare Software - Base Package - Reporting Only (ERM)	$5,250.00
1	ElectionWareResults (Web-Based Hosted Software)-County Level (Previously called Election Night Reporting)	Included
	Election Services	
	Implementation Services (Does not include Coding, Voice Files or Ballots)	
1	3rd Party Configuration and Installation - ES&S In-House	$1,300.00
	Training Services:	
2	Equipment Operations Training	Included
	Poll Worker Train-the-Trainer	
1	Software Training	Included
1	Election On-Site Support (One Event includes a person on-site the day before, day of, and day after election)	Included
X	Installation/Acceptance Testing	Included
X	1 Year Hardware and Software Warranty	Included
	Shipping & Other	
X	Shipping and Handling	$9,160.00
X	Customer Discount	($143,690.00)
	Trade-In Allowance. Equipment Being Traded-In by Customer Includes:	($20,800.00)
	80-AccuVote OSX Scanner with Ballot Box	
	64-AutoMARK	

Total Dollar Amount if Paid in Full at Contract Execution	**$682,544.91**

Scott County Iowa
Purchase Proposal Quote
Submitted by Election Systems & Software

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R E S O L U T I O N

SCOTT COUNTY BOARD OF SUPERVISORS

April 6, 2017

APPROVAL OF THE PURCHASE OF ELECTION EQUIPMENT BY THE SCOTT
COUNTY AUDITOR'S OFFICE FROM ELECTION SYSTEMS AND SOFTWARE
(ES&S) FOR A TOTAL EXPENDITURE OF $682,544.91

BE IT RESOLVED by the Scott County Board of Supervisors
as follows:

     Section 1. The Scott Board of Supervisors hereby

approves the purchase of election equipment by the Scott

County Auditor's Office from Election Systems and Software

(ES&S) for a total expenditure of $682,544.91.

     Section 2. This resolution shall take effect

immediately.