

State of Wisconsin \ Government Accountability Board

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MEMORANDUM

DATE: For the August 28, 2012, Board Meeting

TO: Members, Wisconsin Government Accountability Board

FROM: Kevin J. Kennedy
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SUBJECT: Election Systems and Software (ES&S)
Petition for Approval of Electronic Voting System
Unity 3.2.0.0 Revision 3

Introduction

Election Systems and Software (ES&S) is submitting Unity 3.2.0.0 Revision 3 for approval in Wisconsin. This is a new version of the currently in-use Unity 3.2.0.0 Election Management System. This new version addresses various issues that were first publicly discovered in Cuyahoga County, Ohio during pre-election testing in April 2010. A subsequent investigation by the United States Election Assistance Commission (US-EAC) substantiated three anomalies:

1. Intermittent screen freezes, system lockups and shutdowns that prevent the voting system from operating normally.
2. Failure to log all normal and abnormal voting system events.
3. When a 17" ballot was inserted at an angle, the DS200 did not consistently count the mark properly.

US-EAC issued a formal report of its investigation on December 2011 and issued a Notice of Noncompliance to ES&S on February 1, 2012. ES&S addressed these specific issues and incorporated those changes into Unity 3.2.0.0 Revision 3. As this was a modification of a system previously certified to the 2002 Voting System Standards, upon successful completion of testing, the US EAC certified the new version to the 2002 Voting System Standards on May 16, 2012.

The Government Accountability Board previously approved the Unity Election Management Suite, version 3.2.0.0; DS200, version 1.3.10.0; and AutoMARK electronic ballot marking device versions 1.0, 1.1, and 1.3.1 on December 17, 2009. All of the pieces of equipment tested in July 2012 were upgrades to the above equipment that are currently approved for use in Wisconsin. This is not a new system. The prior version of this system is currently used in Lincoln, Portage, and Wood counties and no significant problems with the equipment have been reported.

Recommendation

Based on the federal testing and certification of this system and on Board staff’s own functional testing of this equipment, Board staff is recommending approval of ES&S Unity 3.2.0.0 Revision 3 for use in Wisconsin. More detailed recommendations are listed on pages 11-12, following the analysis of the functional testing

Decertification of Unity 3.2.0.0

Now that there is a federally-certified solution (Unity 3.2.0.0 Revision 3) for the problems identified in Unity 3.2.0.0, ES&S has voluntarily requested the US-EAC withdraw the certification of Unity 3.2.0.0 effective August 15, 2012. The US-EAC agreed to this resolution and withdrew Unity 3.2.0.0’s certification effective August 15, 2012. This means that at this time, there are three counties (Lincoln, Portage, and Wood) who need to find another voting equipment option before the November 6, 2012 election if the Board was to deny certification. These jurisdictions are likely under a contract with ES&S that may provide other remedies to them in the instance of a decertification, such as ES&S’s provision of other replacement equipment. Additionally, should Revision 3 be approved by the Board, ES&S has committed to providing this solution to municipalities that currently have the DS200 at no additional charge. Since municipalities purchase their own voting systems and contract separately with manufacturers, other contractual remedies have not been verified by staff.

Background

No electronic voting equipment may be offered for sale or utilized in Wisconsin unless the Board approves it. Wis. Stat. § 5.91. The Board has also adopted administrative rules detailing the approval process. Wis. Admin. Code Ch. GAB 7.

On June 15, 2012, the Government Accountability Board (Board) staff received a request from ES&S to have Unity 3.2.0.0 Revision 3 approved for sale and use in Wisconsin. However, ES&S submitted its application using outdated application forms and staff rejected the initial application. On July 11, 2012, ES&S resubmitted their application and Board staff scheduled voting equipment evaluation and demonstrations for ES&S during the week of July 30, 2012. ES&S submitted the following components of Unity 3.2.0.0 Revision 3 for testing:

Equipment	Hardware Version(s)	Firmware Version	Type
DS200	1.2 1.3.10.0	1.6.1.0	Precinct Optical Scan Ballot Counter
AutoMark Voter Assist Terminal (VAT)	1.0 1.1 1.3.1 with Print Engineering Board 1.65 1.3.1 with Print Engineering Board 1.70	1.3.2906	Ballot Marking Device

The DS200 is a digital paper ballot tabulator used primarily as a precinct counting system to tabulate paper ballots at the polling place. Each system can process ballots for up to ten wards or reporting

units. After the voter makes a selection with a marker, or a ballot marking device (AutoMARK VAT), the ballot is inserted into the DS200 for immediate tabulation. The precinct count optical scanner tabulates votes and feeds inserted ballots into an attached secured storage bin.

The system includes a large touch screen display to provide feedback to the voter on the disposition of their ballot. If any errors or irregularities (overvote/crossover vote/blank ballot) are recognized, the voter has the ability to return the ballot for review, or instruct the system to read it as-is. Both sides of the ballots are scanned using a high-resolution image-scanning device, and the votes and ballot images of an election are stored on an external USB flash drive. The flash drive can be removed and transported to the central tabulation location. The DS200 does not store any ballot data, election totals or election images in its internal memory. Results may not be “modemed-in” from the DS200 to a central location.

The AutoMARK VAT is comprised of a color touch screen monitor and integral ballot printer. To use the device, the voter inserts a pre-printed blank ballot into the input tray of the device. The mechanism draws in the ballot and scans a preprinted bar code on the ballot to determine which form of ballot has been inserted. The VAT then displays a series of menu-driven voting choices on its screen. The voter uses the touch screen or key pad provided to make voting selections. The VAT stores these choices in its internal memory.

When the voter has completed the selection process, the VAT provides a summary report for the voter to review his or her choices, and the AutoMARK VAT marks the ballot using its built-in printer. The print mechanism is a duplex device and can print both sides of the ballot. When the printing of the ballot is completed, the VAT feeds the ballot back to the voter. Once the ballot has been marked and is provided to the voter, the AutoMARK VAT clears its internal memory and the paper ballot is the only lasting record of the voting selections made. The voter may visually confirm his or her selections, or the ballot may be re-inserted into the VAT and the voter selections summary report will provide an audio summary for voters with visual impairments. The voter proceeds to enter the ballot into an optical scan voting system for tabulation or a secured ballot box to be hand tabulated by election inspectors after the polls have closed.

Overvotes and crossover votes cannot occur on this equipment and a voter is warned about undervotes prior to the completion of voting. The AutoMARK VAT generates audio voting instructions that guide a visually impaired voter through the election sequence. The voter wears headphones to hear the spoken instructions. The voter makes his or her selections by pressing on a specially designed switch panel. The voter can adjust the volume and the screen may be “blacked out” to deactivate the LCD screen, to provide enhanced privacy. The voter may adjust the tempo (speed) of the audio instructions and the VAT accommodates a sip-puff device. The VAT can be programmed in multiple languages, although languages other than English are not currently required in most Wisconsin municipalities. The City of Milwaukee is subject to a Spanish language requirement under Section 203 of the Voting Rights Act and the VAT accommodates that requirement.

Unity 3.2.0.0 Revision 3 also includes the following software, which was verified by staff:

- Audit Manager v. 7.5.2.0
- Election Data Manager v. 7.8.1.0
- ES&S Image Manager v. 7.7.1.0
- Hardware Programming Manager v. 5.7.1.0
- Election Reporting Manager v. 7.5.4.0
- AutoMARK Information Management System (AIMS) v. 1.3.157
- AutoMARK VAT Previewer 1.3.2906
- LogMonitor Service 1.0.0.0

ES&S submitted complete specifications for hardware, firmware and software related to the systems to G.A.B. staff. In addition, ES&S submitted technical manuals, documentation and instruction materials necessary for the operation of the equipment. The Voting System Test Laboratory responsible for testing the ES&S systems, Wyle Laboratories, recommended the US-EAC to certify ES&S Unity 3.2.0.0 Revision 3. Although all testing on the modifications to the system were tested according to the EAC 2005 Voluntary Voting System Guidelines, the system as a whole was not tested to the 2005 standards and as such was only recommended to receive a 2002 Voting Systems Standards certification. ES&S provided the Wyle report to the Board along with the application for approval of electronic voting equipment. The EAC certified ES&S Unity 3.2.0.0 Revision 3 on May 16, 2012, and issued it certification number ESSUnity3200Rev3.

Functional Testing

As part of the review process, Board staff examined the ES&S application along with the manuals, specifications, documents, reports and instructions necessary for the operation of the equipment. As required by GAB 7.02(1), staff conducted three mock elections with each component of the voting system: a partisan primary, a general election with both a presidential and gubernatorial vote, and a nonpartisan election combined with a presidential preference vote. To ensure the ability of the system to accept these combinations of elections, staff also added a nonpartisan recall election to the partisan primary and a special partisan election to the nonpartisan election. The mock elections offered an opportunity for staff to perform functional testing to ensure the system conforms to all Wisconsin requirements.

Staff designed a test deck of approximately 1,000 test ballots using various configurations of ballot positions over the three separate mock elections to verify the accuracy and functional capabilities of the system. The four AutoMARK hardware configurations were tested by marking approximately 80 ballots with the equipment using various ballot marking configurations and ballot styles. The Auto-MARKed ballots were then verified by staff before being tabulated by the DS200 optical scan equipment. Staff determined the results produced by the optical scan system matched the expected results from the staff's test plan.¹

Public Demonstration

Following the mock elections, an evening public demonstration of the voting system was conducted August 1 from 5:00 – 7:00 p.m. and members of the public were able to personally use the system and provide comment. A number of advocates for hand-count paper ballots appeared at this demonstration with signs and appeared to want to use this demonstration as a forum. The audience was told Wis. Stat. § 5.40 requires the use of electronic voting systems for every municipality with a population of 7,500 or more. The public comments provided seemed to be less specific to this voting system and more critical of electronic voting equipment in general.

Comments from the public demonstration are included in the appendices.

Wisconsin Election Administration Council Demonstration

Also, on August 2 from 9:30 a.m. – 12:00 p.m., the Wisconsin Election Administration Council (WI-EAC), which is made up of municipal and county clerks, representatives of the disability community, and community advocates, participated in a demonstration by the manufacturer and evaluated the equipment. Some advocates for hand-count paper ballots also appeared at this meeting and again appeared to want to use this meeting as a forum for criticism of electronic voting equipment in general,

¹ In the mock General Election test, two ballots (309 & 310) from the AutoMARK test were accidentally omitted from the ballot run through the DS200. Another ballot (322) was marked incorrectly. When the two missing ballots' votes are included along with the incorrectly marked ballot's votes, the results add up perfectly to the tape for the first run. A second run of the ballots, including the two missing ballots and a correctly remade ballot #322 returned the originally expected result.

but WI-EAC members were given preference by staff moderating the meeting both for questions and use of the equipment.

Comments from the WI-EAC are included in the appendices.

Board Staff's Feedback

The Unity Election Management System was used successfully to program each of the four hardware versions of the AutoMARK Voter Assist Terminal and the two DS200 optical scan ballot tabulators. ES&S demonstrated within Unity how to create the election / ballots for each given election. After the equipment counted the ballots, ES&S demonstrated the tabulation of the election results within Unity. ES&S also demonstrated the maintenance of the results by transferring the election data (ballot definition, ballot images, and results) to a different flash drive, which the staff then verified could also be transferred to a computer's hard drive. Staff visually verified the version numbers for each component of the Unity 3.2.0.0 Revision 3 EMS by checking the component's configuration display.

As part of EAC certification for the system, the US-EAC requires all election programming and results reporting to use a "hardened system" for the Unity EMS and AIMS. A "hardened system" is a computer that contains only the Unity EMS and / or AIMS program and is used only for programming and results reporting. No other program or application is permitted on the unit.

AutoMARK Voter Assist Terminal

- Although there were no errors with the physical marking of the test ballot by the AutoMARK and the four hardware configurations produced accurate marks, there were some instances in which the system produced error messages that would require intervention by an election inspector. The messages displayed by the systems during testing were "paper misfeed", "error while printing" and "ballot not recognized." These errors were generally infrequent and fixed by simply re-feeding the ballot into the machine.
- The AutoMARK does not arguably provide absolute privacy and independence for voters with disabilities, especially voters with dexterity or motor disabilities, as voters may need assistance inserting the ballot, removing the ballot and placing the ballot in the ballot box or tabulator. However, it does provide substantial compliance with these objectives.
- For the Partisan Primary, if the voter does not select a party preference they are taken directly to the first party's contests and if they make any selections, will automatically be taken through that party's ballot only and may not be alerted there were other parties' contests on the ballot.

DS200 Optical Scan Tabulator

- Although there were no errors with the tabulation of the test ballots by the DS200 and both hardware configurations produced accurate results, there were some instances in which the DS200 produced error messages that may require intervention by an election inspector. Among the messages by the systems during testing were "ballot too long," "ballot not recognized," and "missed orientation marks." With each of these errors, there was an audio alert notifying the voter of an issue with the ballot. These errors were generally infrequent and fixed by simply re-feeding the ballot into the machine.
- The DS200 was able to correctly read marks in pencil, black pen, blue pen, red pen, and green pen as well as by the ES&S-provided markers.

- The ability of the DS200 to capture digital ballot images automatically may provide a more cost-effective alternative to groups requesting to conduct post-election audits of the vote by review of the paper ballots.
- Write-in votes in the DS200 ballot bin are marked with a small pink circle and depending on the ballot box used, may or may not be separated into a separate write-in bin. The system can be easily configured to capture ballot images of ballots with write-ins and store them on the external USB flash drive, which would permit write-in votes to be easily verified within the Unity EMS. However, this would not replace the need for inspectors to manually inspect each ballot to detect write-in votes where the voter did not fill in the target area next to the write-in line.
- The DS200's ballot input slot may be difficult for individuals with certain types of disabilities to insert a ballot without assistance due to the height and location of ballot input slot.
- There were a few occasions where a ballot jam occurred while inserting the ballot into the DS200. An error message is displayed on the touch screen directing the voter to contact a poll worker and there is also an audio alert notifying the voter. The ballot is returned back to the voter and can be reinserted to be counted.
- While the DS200 includes a large touch screen display to provide feedback to the voter on the disposition of their ballot, the manufacturer's default configuration allows the voter to instruct the DS200 to accept the ballot as is, even if it contains any fatal errors or irregularities such as overvotes or crossover votes. The manufacturer can also set the configuration to automatically reject all ballots with overvotes or crossover votes, which permits the voter to correct the error by remaking his or her ballot and so as to ensure that electors do not mistakenly process a ballot on which a vote for one candidate or all candidates will not count.
- The automatic rejection configuration of the DS200, however, creates issues for processing absentee ballots because no voter is present to remake the ballot. There are three options to address a tabulator ballot count that is inconsistent with the voter count: 1) maintain the ballots rejected by the tabulator and manually add those to the number of ballots identified by the DS200; 2) election inspectors remake ballots rejected by the DS200 (overvotes or crossover votes); or 3) at some point during the Election Day or at the end of the night, the DS200 configuration is changed to permit the election inspectors to override the rejection and allow the tabulator to accept the ballots. Having the configuration of the DS200 changed at some point during the Election Day or at the end of the night may raise questions about the integrity of the results.
- Ballots marked with a party preference choice selection only but no individual votes in the partisan primary are accepted with no feedback provided to the voter on the disposition of their ballot. The DS200 reads this marking as a contest.
- The voting systems upgrades will not be compatible with other ES&S precinct-based optical scan voting equipment currently approved for use in Wisconsin. Municipalities using other ES&S precinct-based optical scan voting equipment will have to either upgrade older versions of firmware or purchase equipment included within this test.
- During the public test, one member of the public placed his own USB memory device in a slot that would normally be locked and sealed on Election Day. (For purposes of the public test only, the equipment had been left open to permit maximum public inspection.) The system was unaffected and properly logged that the memory device was connected. To perpetrate an actual attack on this system in the field would require the perpetrator to avoid the detection of election inspectors while they break the security tag/tamper-evident seal, unlock the secure memory device compartment, replace the memory device with their own device which would need self-

executing code that would somehow circumvent the automated logging system before the tampering was recorded on the tape, re-lock the memory device compartment, and re-apply an identical security tag or tamper-evident seal. While such an attack is possible, it is not probable that such an attacker would avoid detection and apprehension.

- Some legacy systems approved under NASED have the ability to “modem-in” their results to a central office for tabulation. As voting equipment results for Revision 3 were not federally tested nor certified, results are not permitted to be “modemed-in” under the EAC 2005 Voluntary Voting Systems Guidelines. Many municipalities wishing to purchase and use the DS200 would need to change their process for tabulating the election results. This may create delays in how quickly unofficial results are made available to the public as flash drives will need to be physically delivered to the central tabulation site. While the ability to “modem-in” results is not a requirement for certification, the lack of such capacity in the system is noted as a drawback by many local election officials. Staff are advised that the next generation of the Unity system is expected to provide this functionality.

Statutory Compliance

Wis. Stat. § 5.91 provides the following requirements voting systems must meet to be approved for use in Wisconsin. Please see the below text of each requirement and staff’s compliance analysis.

§ 5.91 (1)
The voting system enables an elector to vote in secret.
Staff Analysis
The ES&S voting system meets this requirement by allowing a voter to vote a paper ballot in the privacy of a voting booth or at the accessible voting station without assistance.

§ 5.91 (3)
The voting system enables the elector, for all elections, except primary elections, to vote for a ticket selected in part from the nominees of one party, and in part from nominees from other parties and write-in candidates
Staff Analysis
The ES&S voting system allows voter to split their ballot among as many parties as they wish during any election that is not a partisan primary.

§ 5.91 (4)
The voting system enables an elector to vote for a ticket of his or her own selection for any person for any office for whom he or she may desire to vote whenever write-in votes are permitted.
Staff Analysis
The ES&S voting system allows write-ins where permitted.

§ 5.91 (5)
The voting systems accommodate all referenda to be submitted to electors in the form provided by law.
Staff Analysis
The ES&S voting system meets this requirement.

§ 5.91 (6)
The voting system permits an elector in a primary election to vote for the candidates of the recognized political party of his or her choice, and the system rejects any ballot on which votes are cast in the primary of more than one recognized political party, except where a party designation is made or where an elector casts write-in votes for candidates of more than one party on a ballot that is distributed to the elector.
Staff Analysis
The ES&S voting system can be configured to always reject crossover votes without providing an opportunity for the voter to override. It is recommended that the Board continue to require this configuration due to potential voter confusion over the error message and voter's ability to submit a ballot upon which no votes will be counted.

§ 5.91 (7)
The voting system enables the elector to vote at an election for all persons and offices for whom and for which the elector is lawfully entitled to vote; to vote for as many persons for an office as the elector is entitled to vote for; to vote for or against any question upon which the elector is entitled to vote; and it rejects all choices recorded on a ballot for an office or a measure if the number of choices exceeds the number which an elector is entitled to vote for on such office or on such measure, except where an elector casts excess write-in votes upon a ballot that is distributed to the elector.
Staff Analysis
The voting system meets these requirements with one exception: where the elector casts excess write-in votes in addition to voting for a named candidate. All currently-certified systems will interpret this scenario as an overvote and reject such ballots and require the voter to make the necessary revisions to the ballot. To meet this requirement, election procedures require election inspectors to inspect all ballots for write-in votes that may not be properly counted and separated into the proper receptacle by the voting system; this ensures all ballots are properly accounted for.

§ 5.91 (8)
The voting system permits an elector at a General Election by one action to vote for the candidates of a party for President and Vice President or for Governor and Lieutenant Governor.
Staff Analysis
The ES&S voting system meets this requirement.

§ 5.91 (9)
The voting system prevents an elector from voting for the same person more than once, except for excess write-in votes upon a ballot that is distributed to the elector.
Staff Analysis
The ES&S voting system meets this requirement.

§ 5.91 (10)
The voting system is suitably designed for the purpose used, of durable construction, and is usable safely, securely, efficiently and accurately in the conduct of elections and counting of ballots.
Staff Analysis
The ES&S voting system meets this requirement.

§ 5.91 (11)
The voting system records and counts accurately every vote and maintains a cumulative tally of the total votes cast that is retrievable in the event of a power outage, evacuation or malfunction so that the records of votes cast prior to the time that the problem occurs is preserved.
Staff Analysis
The ES&S voting system meets this requirement.

§ 5.91 (12)
The voting system minimizes the possibility of disenfranchisement of electors as the result of failure to understand the method of operation or utilization or malfunction of the ballot, voting system, or other related equipment or materials.
Staff Analysis
The ES&S voting system meets this requirement if it is configured to automatically reject all overvote and crossover ballots like other optical scan systems currently in use in Wisconsin. This is a requirement of the Board's prior 2009 certification.
In the alternative, if configured to provide error prompts, it is recommended that as a required protocol, an election inspector be stationed to support the DS200 by explaining the options to voters who may receive such an error prompt.

§ 5.91 (13)
The automatic tabulating equipment authorized for use in connection with the system includes a mechanism which makes the operator aware of whether the equipment is malfunctioning in such a way that an inaccurate tabulation of the votes could be obtained.
Staff Analysis
The ES&S voting system meets this requirement.

§ 5.91 (14)
The voting system does not use any mechanism by which a ballot is punched or punctured to record the votes cast by an elector.
Staff Analysis
The ES&S voting system does not use any such mechanism to record votes.

§ 5.91 (15)
The voting system permits an elector to privately verify the votes selected by the elector before casting his or her ballot.
Staff Analysis
The ES&S voting system meets this requirement.

§ 5.91 (16)
The voting system provides an elector the opportunity to change his or her votes and to correct any error or to obtain a replacement for a spoiled ballot prior to casting his or her ballot.
Staff Analysis
The ES&S voting system meets this requirement.

§ 5.91 (17)
Unless the ballot is counted at a central counting location, the voting system includes a mechanism for notifying an elector who attempts to cast an excess number of votes for a single office the ballot will not be counted, and provides the elector with an opportunity to correct his or her ballot or to receive a replacement ballot.
Staff Analysis
The ES&S voting system meets this requirement.

§ 5.91 (18)
If the voting system consists of an electronic voting machine, the voting system generates a complete, permanent paper record showing all votes cast by the elector, that is verifiable by the elector, by either visual or nonvisual means as appropriate, before the elector leaves the voting area, and that enables a manual count or recount of each vote cast by the elector.
Staff Analysis
Since the ES&S voting system presented for approval requires paper ballots to be used to cast votes, this requirement does not apply.

The Help America Vote Act of 2002 (HAVA) also provides the following applicable requirements that voting systems must meet:

HAVA § 301(a)(1)(A)
The voting system shall: <ul style="list-style-type: none"> (i) permit the voter to verify (in a private and independent manner) the votes selected by the voter on the ballot before the ballot is cast and counted; (ii) provide the voter with the opportunity (in a private and independent manner) to change the ballot or correct any error before the ballot is cast and counted (including the opportunity to correct the error through the issuance of a replacement ballot if the voter was otherwise unable to change the ballot or correct any error); and (iii) if the voter selects votes for more than one candidate for a single office – <ul style="list-style-type: none"> (I) notify the voter that the voter has selected more than one candidate for a single office on the ballot; (II) notify the voter before the ballot is cast and counted of the effect of casting multiple votes for the office; and, (III) provide the voter with the opportunity to correct the ballot before the ballot is cast and counted
HAVA § 301(a)(1)(C)
The voting system shall ensure that any notification required under this paragraph preserves the privacy of the voter and the confidentiality of the ballot.
HAVA § 301(a)(3)(A)
The voting system shall— <ul style="list-style-type: none"> (A) be accessible for individuals with disabilities, including nonvisual accessibility for the blind and visually impaired, in a manner that provides the same opportunity for access and participation (including privacy and independence) as other voters
Staff Analysis
The ES&S voting system meets these requirements. However, concerns were stressed regarding the accessibility and privacy of the AutoMARK and the DS200 optical scan

system and that the entire voting process is not completely accessible. There are approximately 1,000 AutoMARK units used in polling places to provide accessible means to the disabled voters and the upgrades would supplement these systems if the jurisdiction determined to upgrade their entire system.

The AutoMARK voting systems for which approval is being sought, do not change the degree of accessibility currently provided by previously approved AutoMARK systems. Accessibility was determined by the former Elections Board to apply to the act of voting, not the insertion or removal of the ballot into the marking device and placing the ballot into the ballot box or optical scan voting system.

Conclusion

To determine whether a voting system should be approved for use in Wisconsin, the following recommendations are based upon three goals.

1. Can the voting system successfully run an open, fair and secured Wisconsin election in compliance with Wisconsin Statutes?

Staff's Response: Yes. Each system accurately completed the mock elections and was able to accommodate the voting requirements of the Wisconsin election process.

2. Does the system enhance access to the electoral process for individuals with disabilities?

Staff's Response: This system does not enhance access to the electoral process for individuals with disabilities, and neither does it reduce or mitigate access for disabled voters. The current scope and degree of accessibility remains substantially the same.

3. Does the voting system meet Wisconsin's statutory requirements?

Staff's Response: Yes. The voting system complies with all applicable state and federal requirements.

Recommendations

1. Board staff recommends approval of this ES&S voting system, Unity 3.2.0.0 Revision 3 and components set forth on page 3. The system accurately completed the mock elections and was able to accommodate the voting requirements of the Wisconsin election process.
2. Board staff recommends that as a continuing condition of the Board's approval, that ES&S may not impose customer deadlines contrary to requirements provided in Wisconsin Statutes, as determined by the Board. In order to enforce this provision, local jurisdictions purchasing ES&S equipment shall also include such a provision in their respective purchase contract or amend their contract if such a provision does not currently exist.
3. Board staff recommends that as a continuing condition of the Board's approval, that this system must always be configured to include the following options:
 - a. Automatic rejection of overvoted ballots with no opportunity for the voter to override.
 - b. Automatic rejection of crossover ballots with no opportunity for the voter to override.
 - c. Digital ballot images to be captured for all ballots tabulated by the system.

4. Board staff recommends election inspectors shall remake all absentee ballots automatically rejected for overvotes and crossover votes so that the ballot count is consistent with total voter numbers.
5. As part of EAC certificate: ESSUnity3200Rev3, only systems included in this certificate are allowed to be used together to conduct an election in Wisconsin. Previous versions that were approved for use by the former Elections Board are not compatible with the new ES&S voting system, and are not to be used together with the equipment versions seeking approval by the Board, as this would void the US-EAC certificate. If a jurisdiction upgrades to Unit 3.2.0.0 Rev 3, they need to upgrade each and every component of the system to the requirements of what is approved herein.
6. Unity EMS 3.2.0.0 Rev 3 may only program the AutoMARK Voter Assist Terminal (VAT), versions 1.0, 1.1, 1.3.1 ((Print Engineering Board (PEB)1.65)), 1.3.1 (PEB 1.70).

Proposed Board Motion

MOTION: The Government Accountability Board approves that staff's recommendation for the ES&S voting systems application to be used in Wisconsin, in compliance with EAC certificate: ESSUnity3200Rev3.

Attachments

- ✓ Appendix 1: Wisconsin Election Administration Council Feedback
- ✓ Appendix 2: Public Feedback
- ✓ Wisconsin Statutes § 5.91
- ✓ Wisconsin Administrative Code, GAB 7
- ✓ US-EAC Certificate of Conformance
- ✓ US-EAC Scope of Certification

APPENDIX 1: Wisconsin Election Administration Council's Feedback

These comments were provided via a structured feedback form

1. How would you rate the functionality of the equipment?

Very Poor	Poor	Fair	Good	Excellent
1	0	3	2	1

- I like this equipment. I think that the fact it rejects cross-voted or over-voted ballots is great! - Election Inspectors should be determining voter intent not a programmed machine. Machine is a little finicky in reading marks but I think that is ok too. I wish the connectivity for reporting results was wireless rather than land line (when the functionality is available). The storage bins on both pieces were small with a lot of handling by election inspectors. Write-in function stamp is not useful. Some functionality, like inability to use colored ballots, is just not a big deal- change is good.
- Like the equipment – to give results at the end of night.
- I question the ability & consistency of counting the markings. It seemed to count a “dot” but not a line? It caused confusion. Error message was not helpful. The red marking is too hard to see. The inability to modem is a huge negative.
- In general the equipment reads the ballots just fine.
- The machine was user friendly.
- When the machine rejected an over voted or blank ballot the description didn't give the voter much information. I could see someone saying I voted (maybe by putting a check beside the name instead of filling in the circle) and they would think they can just accept the ballot. Or if they accept it too quickly and then ask the election worker it would be too late. I guess I would feel better with a different safeguard. Even if the machine said that no votes were read; please contact election official for assistance before they press accept. I like the idea that the newer version would let us customize those screens.
- The same width ballot was kind of interesting to me. I guess I don't have a real issue with that; in some ways it is easier for us and the ballots probably feed more consistently than the smaller width ballots.
- There was lots of discussion about the USB port and securing it and using a store bought one versus their's. At the minimum with all the security concerns with elections the USB should be program that it has to be unlocked with a code before the machine would accept ballots. This way someone could not swap the flash drive out unless they knew the security code. We have to unlock the flashcard for the AutoMARK now and that should be same for this machine.
- Securing the USB port on election day. From what I understood there is a way to secure the USB card in the machine. He said something about putting a security sticker over the top. If that is sticker on “plastic” or “metal” it probably could be easily removed and no one would even know it. To me that would be a useless step.

- I particularly did not like that the machine did not have a modem. For today’s technology that seemed “old school” to me. In Dane County we modem and this particular machine would be a step backwards for us.
- The plastic bin did not provide a separate bin for write-in votes. With lots of ballots that would be an extra headache to sort through to find the faint red circle. That circle should be twice the size and filled in at the minimum! We go through all of our ballots at the end of election night, with the separate bin I can get poll workers working on tallying those write-ins sooner than later if I had to sort through all the ballots first it would be another unnecessary delay.
- It is not good that the machine cannot read colored paper. That could be a real nightmare for multiple jurisdictions at one polling place. Not in the sense of reading the ballots, but making sure the voter gets the correct ballot.
- I believe the machine functioned as explained to us. I did find that the slot to insert the ballot into the reader was very finicky and you had to insert it just right before it would be accepted. I think this will be frustrating for some of the older/disabled voters who may struggle with lining the ballot up just right to get it to feed.
- I would prefer that the tape prints errors as they happen and not just at the end of the night. This will allow the inspectors to monitor the types of errors and make adjustments to the instructions given to voters. Without this printed record, only the person at the machine at that time will know what the errors have been and will have to remember them.

2. How would you rate the accessible features?

Very Poor	Poor	Fair	Good	Excellent
1	0	3	1	1

- I would like to see the screen be a little larger. The messages seem to be very readable but I do not know the accessible requirements for type size or style. I like that it reads AutoMARK ballots.
- Good
- The machine seems to sit too high? The screen would be difficult to access in a wheelchair/scooter.
- Some people were checking the height of the machines on the cabinets. Just from looking at it, not measuring, it seemed rather tall for someone that would be sitting in a wheel chair. I would think someone may have a hard time reaching the screen if they needed to touch the screen for any purpose.
- The optical scan machine seems high for a person in a wheel chair, especially if they have to reach and touch the screen to accept or return a ballot. I think the warning to the voter should be more clear when the machine thinks the ballot is blank so the voter does not “accept” when there are no votes.

3. Rate your overall impression of the system.

Very Poor	Poor	Fair	Good	Excellent
1	0	1	3	0

- I would like to use this equipment!
- Prefer a system of hand ballots
- Excellent
- Security features are met but not the best. With tape on the machine. Without the ability to modem is a hindrance. It meets the standards but still has some issues.
- Overall the machine did work and functions reasonably enough that it can be useful to some jurisdictions. I personally would wait for the newer version to be approved before purchasing this model. Some of that reasoning is I know what I have now and this particular model doesn't make our job that much easier. I don't see the advantage to going this route. In some ways now it works better; we have the Optech Eagles, it returns the ballot to the voter if there is an error, the election worker tells them what happened and the voter understands they can go correct it and do it again. You will still need an election worker accessible to answer what the voter is supposed to do if the ballot is returned to them.
- I did not like the fact that the machine could not read colored ballots. We use them to differentiate between which voters get what ballots, as do many municipalities. I understand that the machine is capable of printing a colored header on the screen, but I do not believe this will be very helpful.
- I understand that the election inspectors have a duty to inspect each ballot for write-ins at the end of the night. But not to have the capability to sort ballots with write-ins from the rest, I think will add time to the checkout at the end of the night and account for more errors when people who have already worked all day must now try to find the hundreds of write-ins we get at a big election.
- Some of the Clerks were saying how they override the ballot if it was over voted versus remaking a ballot (these issues happen most of the time with absentees). When Bob Ohlsen trained us he said when a ballot is rejected we are NOT to override it but remake it at all times. Is this not the requirement? It appears people are doing it differently all over the State. Maybe that should be clarified to everyone. It's kind of a touchy situation because if you are remaking a ballot you have that chance for an error. And if the systems are program correctly they should count those offices with the exception of the over voted offices if you override it. Maybe Bob trained us with never overriding because of issues that happen in a recount. If you take that over voted office component out there is less debate. Your feedback would be appreciated.

APPENDIX 2: Public Feedback

These comments were provided via a structured feedback form

1. How would you rate the functionality of the equipment?

Very Poor	Poor	Fair	Good	Excellent
11	1	1	2	1

*one person created their own rating of zero

- I am concerned that it can be hacked.
- I believe the integrity is compromised. Too many thing can and WILL go wrong. PAPER BALLOTS!!
- Marking ballot via Auto mark v. time-consuming 7 tedious w/a ballot containing many races if the elector chooses not to select a party preference.
- Ward 2 ballots were set out when neither machine accepted it. Perhaps human error more, but the machines had their part as well
- One of the ballots was wrong for any of the machines →organizational problem though... Very awkward to use the marking machines.
- I have no confidence that the machines aren't hackable.
- Don't know- can't see the source code.
- I don't trust the equipment. Bring back hand counted paper ballots!
- Paper ballots (illegible hand-writing)
- Easy to insert USB. (with a downward arrow)
- I don't understand the Public purpose of the Equipment.
- Cannot rate functionality without seeing the code- machine's kept coming up with errors.
- Totally NON FUNCTIONAL!! Lacks Election Integrity. Into the End of America's Democracy. A BLACK HOLE fit for rigging!
- Not finger-tip sensitive
- Touch screen –have to hit the key exactly center rather firmly. The screen printouts on both machines are more distracting than need be and therefore confusing – a simple black text on white background list would be easier to read on the touch screen. Very confusing how to scroll down the list of who you are voting for.

2. How would you rate the accessible features?

Very Poor	Poor	Fair	Good	Excellent
10	0	2	2	2

- My grandfather would be unable to use or/operate these as he is not up to date with technology. He can't even work a VCR.
- Handicap features are very good.
- I didn't use the features –assuming you mean AutoMark, of course, I didn't use it but I know of it.
- I'm curious about the port for using an accessible accessory- would have liked a demo.
- I have no confidence that the machines aren't hackable.
- Accessible? Like the source code?
- I don't trust the machines (because they can be rigged) Hand counted paper ballots!
- I'm learning that many poll workers are unsure of how to work the machines already in use. They are easy to "bully" by people w/ agendas.
- Human Assistance would be superior in several ways, including building community & educating the populace about different abilities.
- Very poor
- ?Hand held Manipulative? Only to "mark" ballot/then has to move to tabulator How 2 honestly substantiate marks?
- See above (Not finger –tip sensitive)
- Good except for these comments: can wheelchair people easily reach the machine?

3. Rate your overall impression of the system.

Very Poor	Poor	Fair	Good	Excellent
11	1	2	2	0

*one person created their own rating of zero

- I don't trust it or the people who operate it.
- Paper Ballots are the only secure option.
- Do not trust the programming of the software. Why isn't its source code available to be reviewed?

Petition for Approval of Electronic Voting System
Unity 3.2.0.0 Revision 3
Appendix 2 – Public Feedback

- We need hand count paper
- Not impressed. Not only are they hackable, but clerks are breaking laws sending them in way too early.
- Tabulator is slower than Eagles currently used in Madison --- could create a backup in busy elections.
- Hand count. Only way for voting integrity PERIOD – END OF STORY
- No access to source code so not sure what I was testing.
- I'm not concerned w/ my ballot marks. I'm concerned with my ballot being counted... correctly. And there is still no way to confirm that.
- I didn't like it. I don't want it in Wisconsin. HAND COUNTED PAPER BALLOTS.
- I have no confidence that the machines aren't hackable.
- No source code makes me dubious.
- Get rid of electronic voting machines! R.I.P. Wisconsin
- No confidence in any voting machine.
- Machines not set up to read the ballots you provided...
- GAB should require (as a condition of approval) that the system always be configured to store all ballot images on the memory stick.
- Unnecessary complication, cost & degrades participatory democracy- introduces needless doubt.
- Very disappointed. It's sad our system has come to this.
- Terrible presentation! The use of Invalid ballots wasted people's time & confused an interested citizen! Does NOT pass the smell test! There are the people, representatives and machines WI votes will be trusted to? WTW? NO WAY! Absolutely not! No credibility for an honest election/GREAT for any fascist intent on RIGGING THE ELECTION!!
- Very concerned about voting machines- lack of accountability.
- I wish you could ship through the under-votes.
- Would be nice for you to include security test results and why your machines are hackable.

Comments not associated with a particular question:

- Room too small, not air conditioned, very hot. Not enough seating for even half of the people that showed up! Inadequate, hackable, no way to trace votes once machines are gone. Not secure Hand count Paper Ballots!
- Thanks for having this demonstration!

tronic voting machines are used, the board of canvassers shall perform the recount using the permanent paper record of the votes cast by each elector, as generated by the machines.

(2) Any candidate, or any elector when for a referendum, may, by the close of business on the next business day after the last day for filing a petition for a recount under s. 9.01, petition the circuit court for an order requiring ballots under sub. (1) to be counted by hand or by another method approved by the court. The petitioner in such an action bears the burden of establishing by clear and convincing evidence that due to an irregularity, defect, or mistake committed during the voting or canvassing process the results of a recount using automatic tabulating equipment will produce incorrect recount results and that there is a substantial probability that recounting the ballots by hand or another method will produce a more correct result and change the outcome of the election.

(3) A court with whom a petition under sub. (2) is filed shall hear the matter as expeditiously as possible, without a jury. The court may order a recount of the ballots by hand or another method only if it determines that the petitioner has established by clear and convincing evidence that due to an irregularity, defect, or mistake committed during the voting or canvassing process the results of a recount using automatic tabulating equipment will produce incorrect recount results and that there is a substantial probability that recounting the ballots by hand or another method will produce a more correct result and change the outcome of the election. Nothing in this section affects the right of a candidate or elector aggrieved by the recount to appeal to circuit court under s. 9.01 (6) upon completion of the recount.

History: 1979 c. 311; 1987 a. 391; 2005 a. 92, 451; 2007 a. 96.
Cross-reference: See also ch. GAB 7, Wis. adm. code.

5.905 Software components. (1) In this section, “software component” includes vote-counting source code, table structures, modules, program narratives and other human-readable computer instructions used to count votes with an electronic voting system.

(2) The board shall determine which software components of an electronic voting system it considers to be necessary to enable review and verification of the accuracy of the automatic tabulating equipment used to record and tally the votes cast with the system. The board shall require each vendor of an electronic voting system that is approved under s. 5.91 to place those software components in escrow with the board within 90 days of the date of approval of the system and within 10 days of the date of any subsequent change in the components. The board shall secure and maintain those software components in strict confidence except as authorized in this section. Unless authorized under this section, the board shall withhold access to those software components from any person who requests access under s. 19.35 (1).

(3) The board shall promulgate rules to ensure the security, review and verification of software components used with each electronic voting system approved by the board. The verification procedure shall include a determination that the software components correspond to the instructions actually used by the system to count votes.

(4) If a valid petition for a recount is filed under s. 9.01 in an election at which an electronic voting system was used to record and tally the votes cast, each party to the recount may designate one or more persons who are authorized to receive access to the software components that were used to record and tally the votes in the election. The board shall grant access to the software components to each designated person if, before receiving access, the person enters into a written agreement with the board that obligates the person to exercise the highest degree of reasonable care to maintain the confidentiality of all proprietary information to which the person is provided access, unless otherwise permitted in a contract entered into under sub. (5).

(5) A county or municipality may contract with the vendor of an electronic voting system to permit a greater degree of access to

software components used with the system than is required under sub. (4).

History: 2005 a. 92.

5.91 Requisites for approval of ballots, devices and equipment. No ballot, voting device, automatic tabulating equipment or related equipment and materials to be used in an electronic voting system may be utilized in this state unless it is approved by the board. The board may revoke its approval of any ballot, device, equipment or materials at any time for cause. No such ballot, voting device, automatic tabulating equipment or related equipment or material may be approved unless it fulfills the following requirements:

(1) It enables an elector to vote in secrecy and to select the party for which an elector will vote in secrecy at a partisan primary election.

(3) Except in primary elections, it enables an elector to vote for a ticket selected in part from the nominees of one party, and in part from the nominees of other parties, and in part from independent candidates and in part of candidates whose names are written in by the elector.

(4) It enables an elector to vote for a ticket of his or her own selection for any person for any office for whom he or she may desire to vote whenever write-in votes are permitted.

(5) It accommodates all referenda to be submitted to the electors in the form provided by law.

(6) The voting device or machine permits an elector in a primary election to vote for the candidates of the recognized political party of his or her choice, and the automatic tabulating equipment or machine rejects any ballot on which votes are cast in the primary of more than one recognized political party, except where a party designation is made or where an elector casts write-in votes for candidates of more than one party on a ballot that is distributed to the elector.

(7) It permits an elector to vote at an election for all persons and offices for whom and for which the elector is lawfully entitled to vote; to vote for as many persons for an office as the elector is entitled to vote for; to vote for or against any question upon which the elector is entitled to vote; and it rejects all choices recorded on a ballot for an office or a measure if the number of choices exceeds the number which an elector is entitled to vote for on such office or on such measure, except where an elector casts excess write-in votes upon a ballot that is distributed to the elector.

(8) It permits an elector, at a presidential or gubernatorial election, by one action to vote for the candidates of a party for president and vice president or for governor and lieutenant governor, respectively.

(9) It prevents an elector from voting for the same person more than once for the same office, except where an elector casts excess write-in votes upon a ballot that is distributed to the elector.

(10) It is suitably designed for the purpose used, of durable construction, and is usable safely, securely, efficiently and accurately in the conduct of elections and counting of ballots.

(11) It records correctly and counts accurately every vote properly cast and maintains a cumulative tally of the total votes cast that is retrievable in the event of a power outage, evacuation or malfunction so that the records of votes cast prior to the time that the problem occurs is preserved.

(12) It minimizes the possibility of disenfranchisement of electors as the result of failure to understand the method of operation or utilization or malfunction of the ballot, voting device, automatic tabulating equipment or related equipment or materials.

(13) The automatic tabulating equipment authorized for use in connection with the system includes a mechanism which makes the operator aware of whether the equipment is malfunctioning in such a way that an inaccurate tabulation of the votes could be obtained.

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(14) It does not employ any mechanism by which a ballot is punched or punctured to record the votes cast by an elector.

(15) It permits an elector to privately verify the votes selected by the elector before casting his or her ballot.

(16) It provides an elector with the opportunity to change his or her votes and to correct any error or to obtain a replacement for a spoiled ballot prior to casting his or her ballot.

(17) Unless the ballot is counted at a central counting location, it includes a mechanism for notifying an elector who attempts to cast an excess number of votes for a single office that his or her votes for that office will not be counted, and provides the elector with an opportunity to correct his or her ballot or to receive and cast a replacement ballot.

(18) If the device consists of an electronic voting machine, it generates a complete, permanent paper record showing all votes cast by each elector, that is verifiable by the elector, by either visual or nonvisual means as appropriate, before the elector leaves the voting area, and that enables a manual count or recount of each vote cast by the elector.

History: 1979 c. 311; 1983 a. 484; 1985 a. 304; 2001 a. 16; 2003 a. 265; 2005 a. 92; 2011 a. 23, 32.

Cross-reference: See also ch. GAB 7, Wis. adm. code.

5.92 Bond may be required. Before entering into a contract for the purchase or lease of an electronic voting system or any ballots, voting devices, automatic tabulating equipment or related equipment or materials to be used in connection with a system, any municipality may require the vendor or lessor to provide a performance bond with a licensed surety company as surety, guaranteeing the supply of additional equipment, parts or materials, provision of adequate computer programming, preventive

maintenance or emergency repair services, training of election officials and other municipal employees or provision of public educational materials for a specified period, or guaranteeing the security of the computer programs or other equipment or materials to be utilized with the system to prevent election fraud, or such other guarantees as the municipality determines to be appropriate.

History: 1979 c. 311.

Cross-reference: See also ch. GAB 7, Wis. adm. code.

5.93 Administration. The board may promulgate reasonable rules for the administration of this subchapter.

History: 1979 c. 311; 1985 a. 332 s. 251 (1).

Cross-reference: See also ch. GAB 7, Wis. adm. code.

5.94 Sample ballots; publication. When an electronic voting system employing a ballot that is distributed to electors is used, the county and municipal clerk of the county and municipality in which the polling place designated for use of the system is located shall cause to be published, in the type B notices, a true actual-size copy of the ballot containing the names of offices and candidates and statements of measures to be voted on, as nearly as possible, in the form in which they will appear on the official ballot on election day. The notice may be published as a newspaper insert. Municipal clerks may post the notice if the remainder of the type B notice is posted.

History: 1979 c. 311; 2001 a. 16.

5.95 Elector information. The board shall prescribe information to electors in municipalities and counties using various types of electronic voting systems to be published in lieu of the information specified in s. 10.02 (3) in type B notices whenever the type B notice information is inapplicable.

History: 1979 c. 311.

Unofficial Text (See Printed Volume). Current through date and Register shown on Title Page.

Chapter GAB 7

APPROVAL OF ELECTRONIC VOTING EQUIPMENT

GAB 7.01 Application for approval of electronic voting system.
GAB 7.02 Agency testing of electronic voting system.

GAB 7.03 Continuing approval of electronic voting system.

Note: Chapter EIBd 7 was renumbered chapter GAB 7 under s. 13.92 (4) (b) 1., Stats., and corrections made under s. 13.92 (4) (b) 7., Stats., Register April 2008 No. 628.

GAB 7.01 Application for approval of electronic voting system. (1) An application for approval of an electronic voting system shall be accompanied by all of the following:

(a) A signed agreement that the vendor shall pay all costs, related to approval of the system, incurred by the board, its designees and the vendor.

(b) Complete specifications for all hardware, firmware and software.

(c) All technical manuals and documentation related to the system.

(d) Complete instruction materials necessary for the operation of the equipment and a description of training available to users and purchasers.

(e) Reports from an independent testing authority accredited by the national association of state election directors (NASED) demonstrating that the voting system conforms to all the standards recommended by the federal elections commission.

(f) A signed agreement requiring that the vendor shall immediately notify the board of any modification to the voting system and requiring that the vendor will not offer, for use, sale or lease, any modified voting system, if the board notifies the vendor that the modifications require that the system be approved again.

(g) A list showing all the states and municipalities in which the system has been approved for use and the length of time that the equipment has been in use in those jurisdictions.

(2) The board shall determine if the application is complete and, if it is, shall so notify the vendor in writing. If it is not complete, the board shall so notify the vendor and shall detail any insufficiencies.

(3) If the application is complete, the vendor shall prepare the

voting system for three mock elections, using offices, referenda questions and candidates provided by the board.

History: Cr. Register, June, 2000, No. 534, eff. 7-1-00.

GAB 7.02 Agency testing of electronic voting system. (1) The board shall conduct a test of a voting system, submitted for approval under s. GAB 7.01, to ensure that it meets the criteria set out in s. 5.91, Stats. The test shall be conducted using a mock election for the partisan primary, a mock general election with both a presidential and gubernatorial vote, and a mock non-partisan election combined with a presidential preference vote.

(2) The board may use a panel of local election officials and electors to assist in its review of the voting system.

(3) The board may require that the voting system be used in an actual election as a condition of approval.

History: Cr. Register, June, 2000, No. 534, eff. 7-1-00.

GAB 7.03 Continuing approval of electronic voting system. (1) The board may revoke the approval of any existing electronic voting system if it does not comply with the provisions of this chapter. As a condition of maintaining the board's approval for the use of the voting system, the vendor shall inform the board of all changes in the hardware, firmware and software and all jurisdictions using the voting system.

(2) The vendor shall, at its own expense, furnish, to an agent approved by the board, for placement in escrow, a copy of the programs, documentation and source code used for any election in the state.

(3) The electronic voting system must be capable of transferring the data contained in the system to an electronic recording medium, pursuant to the provisions of s. 7.23, Stats.

(4) The vendor shall ensure that election results can be exported on election night into a statewide database developed by the board.

(5) For good cause shown, the board may exempt any electronic voting system from strict compliance with ch. GAB 7.

History: Cr. Register, June, 2000, No. 534, eff. 7-1-00.



United States Election Assistance Commission



Certificate of Conformance

ES&S Unity 3.2.0.0 Rev 3
Election Systems & Software

The voting system identified on this certificate has been evaluated at an accredited voting system testing laboratory for conformance to the *2002 Voting System Standards (2002 VSS)*. Components evaluated for this certification are detailed in the attached Scope of Certification document. This certificate applies only to the specific version and release of the product in its evaluated configuration. The evaluation has been verified by the EAC in accordance with the provisions of the *EAC Voting System Testing and Certification Program Manual* and the conclusions of the testing laboratory in the test report are consistent with the evidence adduced. This certificate is not an endorsement of the product by any agency of the U.S. Government and no warranty of the product is either expressed or implied.

Product Name: Unity

Model or Version: Version 3.2.0.0 Revision 3

Name of VSTL: Wyle Laboratories

EAC Certification Number: ESSUnity3200Rev3

Date Issued: May 16, 2012

*Chief Operating Officer and Acting Executive Director,
U.S. Election Assistance Commission*

Scope of Certification Attached

Manufacturer: Election Systems & Software (ES&S)
System Name: Unity 3.2.0.0 Rev. 3
Certificate: ESSUnity3200Rev3

Laboratory: Wyle Laboratories
Standard: 2002 VSS
Date: May 16, 2012



Scope of Certification

This document describes the scope of the validation and certification of the system defined above. Any use, configuration changes, revision changes, additions or subtractions from the described system are not included in this evaluation.

Significance of EAC Certification

An EAC certification is an official recognition that a voting system (in a specific configuration or configurations) has been tested to and has met an identified set of Federal voting system standards. An EAC certification is **not**:

- An endorsement of a Manufacturer, voting system, or any of the system's components.
- A Federal warranty of the voting system or any of its components.
- A determination that a voting system, when fielded, will be operated in a manner that meets all HAVA requirements.
- A substitute for State or local certification and testing.
- A determination that the system is ready for use in an election.
- A determination that any particular component of a certified system is itself certified for use outside the certified configuration.

Representation of EAC Certification

Manufacturers may not represent or imply that a voting system is certified unless it has received a Certificate of Conformance for that system. Statements regarding EAC certification in brochures, on Web sites, on displays, and in advertising/sales literature must be made solely in reference to specific systems. Any action by a Manufacturer to suggest EAC endorsement of its product or organization is strictly prohibited and may result in a Manufacturer's suspension or other action pursuant to Federal civil and criminal law.

System Overview:

ES&S Unity 3.2.0.0 Rev. 3 is comprised of the AutoMARK Voter Assist Terminal (AutoMARK), DS200 Precinct Digital Scanner (DS200), Model 650 high-speed Central Count Scanner (M650), Audit Manager (AM), Election Data Manager (EDM) and ES&S Ballot Image Manager (ESSIM), Hardware Program Manager (HPM), Election Reporting Manager (ERM), Log Monitor Service, and VAT Previewer.

- AutoMARK Voter Assist Terminal enables voters who are visually or physically impaired and voters more comfortable reading or hearing instructions and choices in an alternative language to privately mark optical scan ballots. The AutoMARK supports navigation through touchscreen, physical keypad or ADA support peripheral such as a sip and puff device or two position switch.

- DS200 digital scanner is a paper ballot tabulator designed for use as a polling place scanner. After the voter makes their selections on their paper ballot, their ballot is inserted into the unit for immediate tabulation. Both sides of the ballot are scanned at the same time using a high-resolution image-scanning device that produces ballot images.
- M650 high-speed central count scanner is programmed by jurisdiction officials for a specific election with an election definition from a Zip disk. M650 prints a continuous audit log to a dedicated audit log printer and can print results reports directly from the scanner to a second connected printer. The scanner saves results to a Zip disk that officials can use to format and print results from a PC running Election Reporting Manager.
- Audit Manager runs in the background of the other Unity programs and provides password security and a real-time audit log of all user inputs and system outputs. Election coders use Audit Manager to set Unity system passwords and track user activity.
- Election Data Manager (EDM) is used to enter the election definition. Typically, a master election database is created one time and contains all precincts, districts, and precinct and district relationships. This master file is then used to build each election-specific file to which election-specific contests can be manually added or merged from a previous election file.
- ESSIM is a desktop publishing tool that allows users to design and print ES&S paper ballots. ESSIM uses ballot style information created by EDM to display the WYSIWYG ballots. Users can then apply typographic formatting (font, size, attributes, etc.) to individual components of the ballot. Text and graphic frames can also be added to the ballot.
- Hardware Program Manager (HPM) enables the user to import, format, and convert the election file; define districts; specify election contests and candidates; create election definitions for ballot scanning equipment; burn PC Cards, EPROMS, MemoryPacks or PEBs; and create the Data Acquisition Manager Precinct List. The Hardware Programming Manager is primarily used for converting the election IFC file for use with the Election Reporting Manager and for creating and loading election parameters; however, it may also be used for coding the election.
- Election Reporting Manager (ERM) is ES&S's election results reporting program. ERM generates paper and electronic reports for election workers, candidates, and the media. ERM can also display updated election totals on a monitor as ballot data is tabulated, and it can send results reports directly to media outlets.

Certified System before Modification:

ES&S Unity 3.2.0.0 Rev. 1

Certification Number: ESSUnity3200Rev1

ES&S Unity 3.2.0.0

Certification Number: ESSUnity3200

Anomalies and/or Additions addressed in Unity 3.2.0.0 Rev. 3:

The focus of this test campaign was to test all additions and modifications made to the system's software, hardware and firmware since the certification of Unity 3.2.0.0. Wyle performed full-functional testing on the DS200 with the primary focus on the modifications of the DS200 firmware to fix the anomalies addressed specifically in the EAC's Formal Investigation Report. These include:

- Intermittent screen freezes, the system lockups and shutdowns which prevents the voting system from operating in the manner in which it was designed.
- Failure to log all normal and abnormal voting system events.
- Skewing of the ballot resulting in a negative effect on system accuracy.
- Unresponsive Touch Screen

Mark definition:

ES&S's declared level of mark recognition for the DS200 is a mark across the oval that is 0.2" long X 0.03" wide at any direction.

Tested Marking Devices:

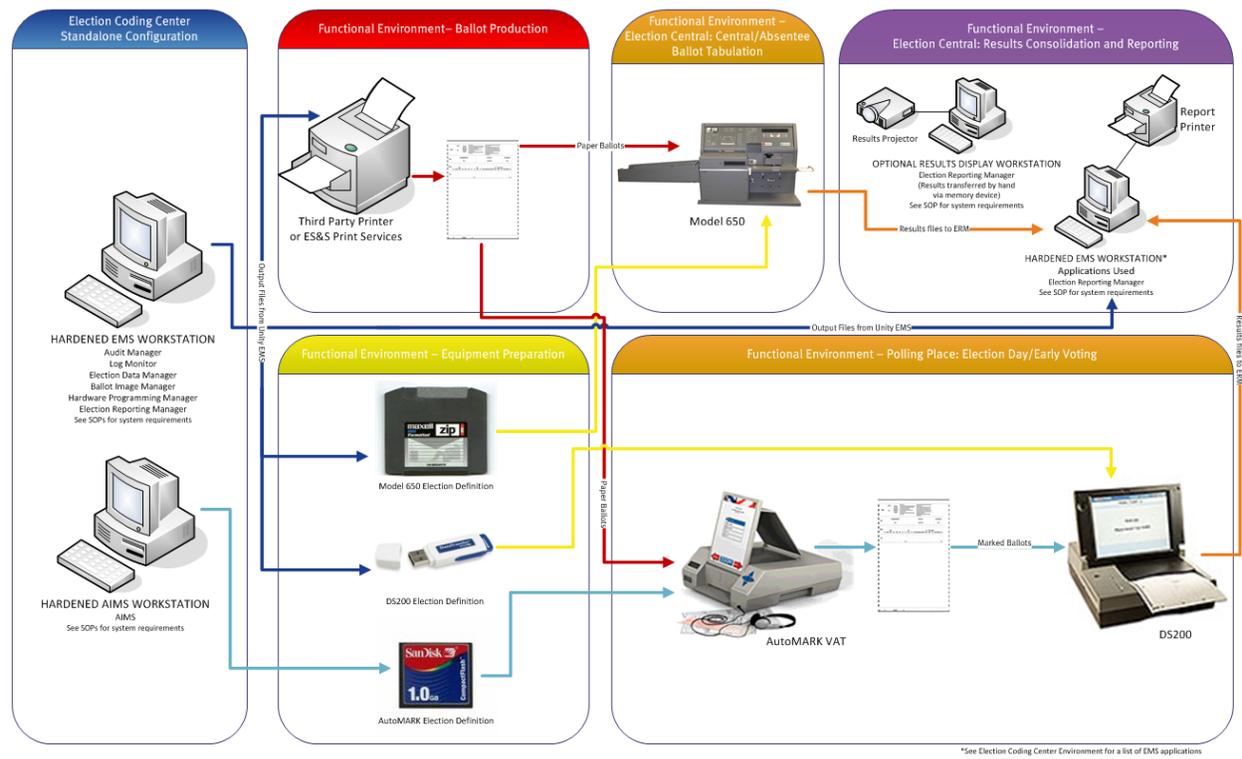
Bic Grip Roller Pen

Language capability:

System supports: English and Spanish.

Components Included:

This section provides information describing the components and revision level of the primary components included in this Certification.



System Component	Software or Firmware Version	Hardware Version	Operating System or COTS	Comments
DS200	1.6.1.0	1.2		Precinct Digital Scanner
Model 650	2.2.2.0	1.1, 1.2		Central Count Scanner, high-speed
AutoMARK A100	1.3.2906	1.0		ADA Ballot Marking Device
AutoMARK A200	1.3.2906	1.1, 1.3		ADA Ballot Marking Device
Ballot Box Hardware		1.2, 1.3		Plastic ballot box
Ballot Box Hardware		1.0, 1.1, 1.2		Metal ballot box with diverter
Audit Manager (AM)	7.5.2.0			
Election Data Manager (EDM)	7.8.1.0			
ESS Ballot Image Manager (ESSIM)	7.7.1.0			
Hardware Programming Manager (HRM)	5.7.1.0			
Election Results Manager (ERM)	7.5.4.0			
Log Monitor Service	1.0.0.0			
AutoMARK Information Management System (AIMS)	1.3.157			
VAT Previewer	1.3.2906			
Server PC		Dell Optiplex GX20		
Server PC		Dell Precision T3500		
Client PC		Dell Optiplex 760		
Ballot on Demand Printer		OKI C9650		
Report Printer		HP LaserJet 4050N		
Zip Disk				Results storage for M650
Headphones		Avid FV 60		

System Limitations

This table depicts the limits the system has been tested and certified to meet.

Characteristic	Limiting Component	Limit	Comment
Precincts Allowed in an Election	HPM/ERM	2900	1639 if using paper ballot coded by precinct
Precinct included per poll (reporting limit)	ERM	1900	
Candidate/counters per election	ERM	21000	
Maximum candidates	HPM	9900	
Contest allowed in an election	ERM	Depends on election	Limited by 21000 maximum counters
Candidates/counters allowed per precinct	ERM import	1000	
Ballot styles allowed per election	HPM (ballot sequence code)	5500	1639 if using paper ballot coded by style
Contests allowed per ballot style	HPM	200	Or number of ballot positions
Precincts allowed per ballot style	HPM	1500	
Candidates (ballot choices) allowed per contest	HPM	175	
Count for any precinct element	ERM Report (ERM results import)	500000	65550 from any tabulator media
Number of parties allowed	HPM	18	
"Vote for" per contest	HPM	90	

Component Limitations:

PAPER BALLOT LIMITATIONS

1. The paper ballot code channel, which is the series of black boxes that appear between the timing track and ballot contents, limits the number of available ballot variations depending on how a jurisdiction uses this code to differentiate ballots. The code can be used to differentiate ballots by Sequence (limited to 1-1639 variations), Type (1-30 variations) or Split (1-40 variations).

2. If Sequence is used as a ballot style ID, it must be unique election-wide and the Split code will always be 1.

3. If Sequence is used as a precinct ID, it limits the number of styles in a precinct to 1200 (30 Types x 40 Splits).

DS200

1. A DS200 coded for Election Day counting will not support more than 18 precincts.

2. The DS200 does not support more than 40 ballot styles in a single absentee precinct in a ballot by-style election. If an election definition contains more than 40 ballot styles, the user

has to define more than one absentee precinct and then separate the ballots into groups for processing.

3. All optical scan ballots used in a given election must be the same size and have the same position capacity.

4. An early vote station will only support a maximum limit of 9999 precincts. A large number of precincts may result in small ballot processing delays.

6. An early vote station will not be able to print a precinct-by-precinct report by default.

MODEL 650

1. The Model 650 supports a maximum 37503 candidates or counters for any election.

2. The M650 does not support more than 100 ballot styles for a single absentee precinct in a ballot by-style election. If an election definition contains more than 100 ballot styles, the user has to define more than one absentee precinct and then separate the ballots into groups for processing

3. All optical scan ballots used in a given election must be the same size and have the same position capacity.

4. The M650 does not support the Arrow style response area.

5. Ballots must be fed in one particular orientation.

6. The Model 650 can interpret a maximum of 1499 office group codes in an election definition. (An “office group” is defined as the collection of one or more contests (including rotation) that always appear together on any ballot style.). This limitation restricts the number of precincts allowed in an election if “precinct only” offices are defined (District Type PRC) because each “precinct only” office always appears in a different office group.

AUTOMARK VOTER ASSIST TERMINAL

1. ES&S AutoMARK capacities exceed all documented limitations for the ES&S election management, vote tabulation and reporting system. For this reason, Election Management System and ballot tabulator limitations define the boundaries and capabilities of the AutoMARK system as the maximum capacities of the ES&S AutoMARK are never approached during testing

2. The AutoMARK recognizes ballot content by the code channel. If the Sequence code is used for Ballot Style ID and the election definition has more than one precinct that uses a specific ballot style, the AutoMARK will not determine which precinct the ballot is associated with. The user should not define ballot style names in the election definition that imply precinct.

ELECTION DATA MANAGER

1. In both open and closed primary elections, operational procedures to define the election in EDM must be strictly followed.

2. The user must input the Party Preference (or Pick Contest) title as „Party Preference“ in the Office Title box in the Add Office Information window.

3. The user must add a “crossover party” using the Parties option under the **County** menu when the election is an open primary with a party preference race.

4. There is a limitation of 99 candidates for rotation positions. This limit does not apply to positions that float and do not change candidate order.
5. The maximum number of languages supported is 13.
6. The ability to delete parties under the **County** and **Election** menu is not supported.
7. In a primary election, the system does not support displaying the contest(s) from another party's ballot if a third party in the election has candidates in that contest.

ES&S BALLOT IMAGE MANAGER

1. ESS Image Manager requires the installation of Adobe Type Manager for assurance that screen displays of the ballot match the printed ballot.
2. ESSIM does not give a column number or position to straight party candidates in the .ifc. The user must assign these manually in HPM.

BALLOT ON DEMAND

1. Ballot on Demand requires an Oki printer.
2. Batch Ballot printing is not reflected in any BOD reports.
3. Batch Ballot serial numbers are not supported with multi-page ballots.

HARDWARE PROGRAMMING MANAGER (WINDOWS)

1. Hardware Programming Manager supports no more than 18 parties for a single election. This limit is reduced to 12 parties, counting "nonpartisan" as a party, for an Open Primary election that uses two page ballots with the second page containing only non-partisan contests. Party/partisan contents CANNOT flow between pages in an Open Primary.
2. When coding an election for an Open primary, the user cannot include (in total voting) the crossover party listed in the **Description** box in the Election Specifications window. The party type displays in the numbered description box, but the user should clear the **Include** check box next to the crossover party type.
3. When coding an election for an open primary, the party preference contests must be identified as nonpartisan.
4. There is a maximum of 31 Statistical Party Counters.
5. Change/Add Polling Place
 - A polling place may be identified to contain all precinct in the election
 - There is a limit of 80 Precincts that can be assigned to a Polling Place with the following exceptions:
 - The M100 and DS200 have a limit of 18 individually selected precincts that can be assigned to a polling place.
6. Ballot Styles
 - In an Open Primary, the number of contest associated with any party (or „nonpartisan“ designation) within a ballot style cannot exceed 70. For an Open Primary election, this limitation replaces the 200 contest limit.

7. Districts

- A district is identified by a code that contains 7 positions but is constructed of a 3 position District Type code and a 4 position District code within the type. There are a limit of 19 District Types and 39 Districts for any given type except for the „PRC“ district type. The “PRC” district type is used in an election where virtually all precincts have one or two unique precinct specific contests. When the “PRC” district type is active, the District code is designated by the 4 position precinct ID code. The number of precincts that can use this code is a function of the election content and limited by the M650. See “Section 2.2.1.”
- A precinct can only have 39 total districts associated with it.

8. Candidates

- The maximum number of candidate rotations per contest is 140. This includes candidate position sets where candidate order is not changed, but use alternate position numbers.

ELECTION REPORTING MANAGER

1. The Election Reporting Manager requires a minimum monitor screen resolution of 800 x 600.
2. ERM's maximum page size for reports is 5,000 pages.
3. Serve650 continues to run after ERM is stopped via the Windows Task Manager. If the ERM task is ended, Serve650 must also be canceled, or the PC rebooted.
6. Mixed equipment within a single SPP file is not supported. Each equipment type must have its own SPP file.
7. Contest/Precinct selection pop up display limited to 2,900 contests/precincts.
8. Dynamic Precinct Reports are not supported when updating results from iVotronic Audit Data.
9. Foreign characters are not supported in ERM. This has to do with the creation of the XML results file out of ERM.
10. Generating a District Canvass Report without first properly creating a .DST file can result in inaccurate totals reports and inconsistent report formatting.
11. When retrieving election data from DS200 tabulators; ERM supports a maximum of 1900 precincts for an “All Precincts Included” Poll.

AUTOMARK INFORMATION MANAGEMENT SYSTEM (AIMS)

If the number of precincts imported from Election Data Manager exceeds 840, an election administrator must manually configure the code channel for precinct number 840 within AIMS. Code channel information for all other precincts imports properly.

Functionality

Supported Functionality Declaration

Feature/Characteristic	Yes/No	Comment
Voter Verified Paper Audit Trails		
VVPAT	N	

Feature/Characteristic	Yes/No	Comment
Accessibility		
Forward Approach	Y	
Parallel (Side) Approach	N	
Closed Primary		
Primary: Closed	Y	
Open Primary		
Primary: Open Standard (provide definition of how supported)	Y	
Primary: Open Blanket (provide definition of how supported)	N	
Partisan & Non-Partisan:		
Partisan & Non-Partisan: Vote for 1 of N race	Y	
Partisan & Non-Partisan: Multi-member ("vote for N of M") board races	Y	
Partisan & Non-Partisan: "vote for 1" race with a single candidate and write-in voting	Y	
Partisan & Non-Partisan "vote for 1" race with no declared candidates and write-in voting	Y	
Write-In Voting:		
Write-in Voting: System default is a voting position identified for write-ins.	Y	
Write-in Voting: Without selecting a write in position.	Y	
Write-in: With No Declared Candidates	Y	
Write-in: Identification of write-ins for resolution at central count	Y	
Primary Presidential Delegation Nominations & Slates:		
Primary Presidential Delegation Nominations: Displayed delegate slates for each presidential party	N	
Slate & Group Voting: one selection votes the slate.	N	
Ballot Rotation:		
Rotation of Names within an Office; define all supported rotation methods for location on the ballot and vote tabulation/reporting	Y	
Straight Party Voting:		
Straight Party: A single selection for partisan races in a general election	Y	
Straight Party: Vote for each candidate individually	Y	
Straight Party: Modify straight party selections with crossover votes	Y	
Straight Party: A race without a candidate for one party	Y	
Straight Party: "N of M race (where "N">1)	Y	
Straight Party: Excludes a partisan contest from the straight party selection	Y	
Cross-Party Endorsement:		
Cross party endorsements, multiple parties endorse one candidate.	Y	
Split Precincts:		

Feature/Characteristic	Yes/No	Comment
Split Precincts: Multiple ballot styles	Y	
Split Precincts: P & M system support splits with correct contests and ballot identification of each split	Y	
Split Precincts: DRE matches voter to all applicable races.	N	
Split Precincts: Reporting of voter counts (# of voters) to the precinct split level; Reporting of vote totals is to the precinct level	Y	System lists the # of voters.
Vote N of M:		
Vote for N of M: Counts each selected candidate, if the maximum is not exceeded.	Y	
Vote for N of M: Invalidates all candidates in an overvote (paper)	Y	
Recall Issues, with options:		
Recall Issues with Options: Simple Yes/No with separate race/election. (Vote Yes or No Question)	N	
Recall Issues with Options: Retain is the first option, Replacement candidate for the second or more options (Vote 1 of M)	N	
Recall Issues with Options: Two contests with access to a second contest conditional upon a specific vote in contest one. (Must vote Yes to vote in 2 nd contest.)	N	
Recall Issues with Options: Two contests with access to a second contest conditional upon any vote in contest one. (Must vote Yes to vote in 2 nd contest.)	N/A	Overturned - US District Court 7/29/03: CA Election Code sect. 11383
Cumulative Voting		
Cumulative Voting: Voters are permitted to cast, as many votes as there are seats to be filled for one or more candidates. Voters are not limited to giving only one vote to a candidate. Instead, they can put multiple votes on one or more candidate.	N	
Ranked Order Voting		
Ranked Order Voting: Voters can write in a ranked vote.	N	
Ranked Order Voting: A ballot stops being counting when all ranked choices have been eliminated	N	
Ranked Order Voting: A ballot with a skipped rank counts the vote for the next rank.	N	
Ranked Order Voting: Voters rank candidates in a contest in order of choice. A candidate receiving a majority of the first choice votes wins. If no candidate receives a majority of first choice votes, the last place candidate is deleted, each ballot cast for the deleted candidate counts for the second choice candidate listed on the ballot. The process of eliminating the last place candidate and recounting the ballots continues until one candidate receives a majority of the vote	N	

Feature/Characteristic	Yes/No	Comment
Ranked Order Voting: A ballot with two choices ranked the same, stops being counted at the point of two similarly ranked choices.	N	
Ranked Order Voting: The total number of votes for two or more candidates with the least votes is less than the votes of the candidate with the next highest number of votes, the candidates with the least votes are eliminated simultaneously and their votes transferred to the next-ranked continuing candidate.	N	
Provisional or Challenged Ballots		
Provisional/Challenged Ballots: A voted provisional ballots is identified but not included in the tabulation, but can be added in the central count.	Y	
Provisional/Challenged Ballots: A voted provisional ballots is included in the tabulation, but is identified and can be subtracted in the central count	Y	
Provisional/Challenged Ballots: Provisional ballots maintain the secrecy of the ballot.	Y	
Overvotes (must support for specific type of voting system)		
Overvotes: P & M: Overvote invalidates the vote. Define how overvotes are counted.	Y	
Overvotes: DRE: Prevented from or requires correction of overvoting.	N	
Overvotes: If a system does not prevent overvotes, it must count them. Define how overvotes are counted.	Y	
Overvotes: DRE systems that provide a method to data enter absentee votes must account for overvotes.	N	
Undervotes		
Undervotes: System counts undervotes cast for accounting purposes	Y	
Blank Ballots		
Totally Blank Ballots: Any blank ballot alert is tested.	Y	
Totally Blank Ballots: If blank ballots are not immediately processed, there must be a provision to recognize and accept them	Y	
Totally Blank Ballots: If operators can access a blank ballot, there must be a provision for resolution.	Y	
Networking		
Wide Area Network – Use of Modems	N	
Wide Area Network – Use of Wireless	N	
Local Area Network – Use of TCP/IP	N	
Local Area Network – Use of Infrared	N	
Local Area Network – Use of Wireless	N	
FIPS 140-2 validated cryptographic module	N	
Used as (if applicable):		
Precinct counting device	Y	DS200

Feature/Characteristic	Yes/No	Comment
Central counting device	Y	M650