

Miami-Dade County

OIG

FINAL REPORT

Miami-Dade County Voting Systems

Contract No. 326

May 20, 2003

Table of Contents

I.	INTRODUCTION	Page	1
II.	BACKGROUND		2
III.	SCOPE OF REVIEW		6
IV.	ISSUES – OBSERVATIONS AND FINDINGS		7
A.	VOTING SYSTEMS CERTIFICATION		7
	The Bureau of Voting Systems Certification		7
	Certification and the Tri-Lingual Requirements of the RFP		9
B.	THE PERFORMANCE BOND AND WARRANTIES		11
	The Performance Bond		12
	Performance Bond Terms and Reduction Schedules		12
	Performance Bond – Acceptance Testing		16
	System(s) Warranties – Warranty for Fitness of Intended Uses		17
	Miami-Dade County’s Business Requirements – The iVotronics being fit for intended uses.		19
C.	OPEN POLLS PROCEDURE A.K.A. “BOOT-UP TIME”		21
	The requirements of bitmap and the external CompactFlash memory card to run a tri-lingual ballot.		22
	The vendor knew or should have known that three languages required bitmap.		26
	There is not enough flash memory for bitmap in the absence of a CompactFlash card.		28
	Boot-up time: Why does it take so long?		29
	iVotronic Hardware System Components – The Significance of the Processor and SRAM.		30
	CompactFlash Cards		33
	Continuing and immediate future costs associated with CompactFlash Cards		34
D.	COUNTY STAFF MUST HAVE INDEPENDENT KNOWLEDGE OF THE SYSTEM – CUTTING OFF THE UMBILICAL CORD		36
	ITA Test Reports and Technical Data Packages		36
	The County’s Lack of a Maintenance Manual		38
	Supplemental Agreements and Software Upgrades		39
V.	CONCLUSION & RECOMMENDATIONS		42

I. INTRODUCTION

Conducting elections will never be the same in the State of Florida. This is especially true in Miami-Dade County. Punchcards have been outlawed. There will be no more controversy surrounding hanging chads. Overvotes have been effectively eliminated with the implementation of new technology and voters are now alerted when an undervote is cast. The price of conducting elections will also never be the same again. This, too, is especially true in Miami-Dade County. Not counting the price of initially procuring our new technology, the operational costs of conducting elections have and, no doubt, will continue to skyrocket.

In response to the debacle of the September 10, 2002 Primary Election, the OIG was requested by the Mayor and Board of County Commissioners to investigate the problems contributing to the election's operational deficiencies and, by September 20, 2002, present a report detailing viable recommendations which could effectively be implemented to achieve a successful November general election. The OIG did comply with this request and issued its report. Primarily, the report recommended that the County treat the impending election as a crisis situation where a "must not fail" mentality was mandatory. The OIG recommended that the County's crisis management professionals lead the effort to support logistical, planning, and training requirements for the orderly and human-power supported efforts capable of ensuring a successful election. The actions undertaken by all County departments and staff must be commended for their tireless, round-the-clock efforts. This is especially true of Director Carlos Alvarez of the Miami-Dade Police Department, who was tapped to lead the effort as the General Election Special Project Manager. Furthermore, the support and leadership provided by the County Commission's Elections Task Force and the Miami-Dade Election Reform Coalition (the Coalition) also greatly contributed to a comprehensive effort to ensure a successful election.

The OIG recognizes that the monetary and human resource costs associated with the November 2002 General Election were unavoidable. By last report, the total cost approximated \$5 million dollars.¹ While approximately \$2.1 million of the above total was for police overtime and will, we hope, not be as high in future elections, anticipated Elections Department staffing increases and

¹ Source: County Manager's Memorandum to the Elections Subcommittee, "November 5 Election Expense Report," dated February 21, 2003.

the need for pre-election security details will, nevertheless, contribute to the bottom-line increased cost of elections. The recognized, inescapable need for county personnel to continue staffing polling locations is also a cost factor, as are extra efforts in poll worker recruitment and training. Elections Department staff will also have to undergo continuous training, especially as software and firmware upgrades are made to the voting system. Additional equipment, not originally anticipated, must also be purchased to utilize the voting system. It has also been recognized that the Elections Department needs new facilities that should incorporate warehousing, training and administrative functions. And let us not forget that the voting system itself was a \$24 million dollar purchase that has drawn controversy and provoked questions about future usability.

Finally, the OIG noted in its September 20, 2002, report that “the OIG is not comfortable with the iVotronic System procurement process and the performance of the contractual obligations of the vendor. As such, [the OIG] has initiated a separate inquiry to examine the contract.” This report details our findings.

II. BACKGROUND

On December 14, 2000, Governor Jeb Bush, through Executive Order 2000-349, convened a task force to study the elections debacle surrounding the November 2000 Presidential Elections.

The Task Force report, dated March 1, 2001, recommended a uniform voting system throughout the State, which meets both Florida’s “Voting System Standards” and “User Standards” by having low voter rates of error, ease of set-up, ease of use, ease of maintenance, and the ability for voters to make changes and corrections.

During the 2001 Legislative session, the Florida Legislature passed the “Florida Election Reform Act of 2001,” Chapter 2001-40, Laws of Florida. The legislation was signed by the Governor on May 10, 2001. The most significant impact of the new law was the effective ban of punchcard voting to be effective by the September 2002 primaries. New voting systems were required to notify in-person voters if an individual overvoted, e.g., voted for more than one candidate in a given race. The system was required to reject overvotes.

Additionally, if a voter did not cast a vote for a given candidate in a given race (undervoted), the system was required to notify the voter. To achieve these goals, only marksense voting with optical scan equipment at each precinct and/or direct recording equipment (DRE) touch-screen devices were effectively authorized for in-person voting.

As for Miami-Dade County, on July 24, 2001, a Request for Proposal (RFP) to procure a Voting System was approved by the Board of County Commissioners (BCC). The RFP sought a turnkey DRE Voting System with 7,200 touch-screen voting booths to be used for in-person voting (for both early voting and voting on election day) and a turnkey optical scan system to accommodate all mail-in absentee voters. Proposals were initially due on September 21, 2001. By way of addendum, the due date was extended to September 25, 2001.

Formal Selection Committee kickoff meetings were held on September 27, 2001 and October 10, 2001. Oral Presentations were heard by three vendors. Election Systems and Software, Inc. (hereinafter ES&S) made its oral presentation to the Selection Committee on October 15, 2001. By way of memorandum, the County Manager was advised that ES&S received the highest ranking of the Selection Committee. Thereafter, a Negotiations Committee was devised and directed to negotiate a contract with ES&S. Negotiations took place from December 6, 2001 through January 10, 2002, at times with multiple negotiations taking place simultaneously. On January 29, 2002, the Voting Systems Contract RFP No. 326 was brought before the BCC for contract award. Given implementation and operational time constraints, County staff asked for the bid protest period to be waived. The BCC approved the item and awarded the contract to ES&S. Among other important provisions, the contract required ES&S to deliver a voting system capable of supporting three languages.

At the time of the contract award, ES&S had not been certified by the State to run a tri-lingual ballot on its iVotronic touch-screen machines. This finally occurred four months later on May 7, 2002, with the certification of ES&S Release 3, which included iVotronic firmware level 7.2.5.0. Only after its certification did Miami-Dade's elections officials see the tri-lingual ballot's layout -- two columns. Shortly thereafter, both Miami-Dade and Broward County election officials requested that ES&S redesign the tri-lingual ballot in a single column format. Some other modifications, mainly to the ballot template, were also requested. (See Exhibit A). The tri-lingual ballot redesign was resubmitted

to the State Bureau of Voting System Certification on July 3, 2002. Certification was achieved on August 7, 2002, for ES&S Release 4, which includes firmware Version 7.4.5.0.

Just prior to the September 10, 2002 primary election, ES&S required modifications to its Election Data Manager and M650 optical scanner. Apparently, the system was experiencing some problems and there was a last minute rush to have the modifications certified. These modifications were included in Release 4.2, the voting system certification that was used by Miami-Dade County in both the primary and general elections.²

As we know from the OIG's investigation of the primary election of September 20, 2002, the debacle was, in large part, caused by the exorbitant set-up time required by the ES&S devices. During the time from the primary to the general election, ES&S had apparently developed a work-around to the lengthy opening polls process. As explained by ES&S, these modifications would allow the removal of the Master PEB (personal electronic ballot) device after a few minutes during the boot-up sequence. The remainder of the boot-up sequence, while not shortened, could continue without the presence of the PEB. Therefore, the Master PEB could then be utilized to open the next machine. This firmware modification was mentioned in the County Manager's Status Report to the Governor, dated September 19, 2002, and was brought up in a County staff meeting, which took place at the Miami-Dade Police Department on Saturday, September 21, 2002.³ It was decided at that meeting by Special Project

² The application for Release 4.2 was submitted on August 13, 2002 and was certified on August 21, 2002.

³ In his report to the Governor, the County Manager writes: "[ES&S] has advised that they will complete modifications to the firmware Miami-Dade County uses to support its three-language ballots by Friday, September 20, 2002. . . . The ability of Miami-Dade County to utilize the revised firmware is contingent upon the successful certification of that firmware by the State Division of Elections by September 27th. ES&S has requested from the State an expedited review and approval process. We ask for your assistance in ensuring that this happens in a timely manner."

On September 20, 2002, the Chief of the Voting System Certification Bureau writes to ES&S regarding the above statements to the Governor: "As of this writing we have had no communications from you notifying us that a new product is going to be submitted. We have had no communications in writing, or by telephone, regarding the need to provide you with an expedited review and approval process. You have not filed application for certification of the new product. And, as of this writing, Wyle Laboratories reports that they have not received any firmware from you as described above."

Even without knowing of these delays, it was a wise decision to abandon depending on the 7.5 fix to cure the boot-up problem.

Manager Alvarez that the County would not use this upgrade, but instead logistically plan the election around known factors not new untested variables.

The certification package for firmware version 7.5 (intended Release 4.3) was electronically sent to the State Certification Bureau on September 24, 2002 (officially delivered on September 26, 2002), and testing was tentatively scheduled in Miami for Friday, October 4, 2002 through Sunday, October 6, 2002. On Thursday, October 3, 2002, ES&S withdrew its application for certification of Release 4.3.

On December 11, 2002, ES&S resubmitted its application for certification of firmware version 7.5 (intended Release 4.3). From December 2002 to March 26, 2003, ES&S made additional submissions of technical data package components in support of its application for certification. After a thorough review by the State, the ES&S application was recently deemed complete. (See Exhibit B).

Qualification testing for Version 7.5 took place at ES&S headquarters in Omaha, Nebraska from April 28 – May 1, 2003. The focal goal of the upgrade was to quicken the time it takes to open the polls for voting. It was orally announced on April 29, 2003, that Version 7.5 would not be certified. At that juncture, ES&S made on-the-spot modifications, requiring the software's source code to be recompiled. Thereby, renaming the new modification as Version 7.5.1.

On the afternoon of May 7, 2003, the State of Florida, Bureau of Voting Systems Certification, sent written notification to Election Systems and Software, Inc. (ES&S) and Miami-Dade County Elections Department Officials that the iVotronic firmware upgrade Version 7.5, and its most recent modification 7.5.1, failed to receive state certification in its latest submission pursuant to the State's Voting Systems Standards (see Exhibit I). The OIG received the same written notification. In short, as of the writing of this report, no permanent solution to the start-up problem has been implemented. ES&S has sixty (60) days to correct the identified deficiencies and resubmit the latest modification to the State.

However, according to sentiments of County staff, firmware version 7.5 was only seen as a band-aid solution to the start-up problem. The real hope lies in version 8.0, a product that is marketed by ES&S to its Florida clients, but has yet to be received by the State for certification.

While no application for certification has yet to be received by the State, there has been much discussion about an intended firmware version 8.0. As represented by ES&S during a Florida Users Group meeting in Ft. Myers, Florida, iVotronic firmware version 8.0 is only one aspect of an intended complete Unity System upgrade. The upgrades affect the whole spectrum of the Unity System, including the Election Data Manager, Ballot Image Manager, Data Acquisition Manager, Reporting Manager, and Hardware Programming Manager.

As explained to the OIG by County elections officials, these upgrades are anticipated to be certified by the fall of 2003, and are intended to be utilized in the Presidential Preference Primaries and General Election of 2004. *According to the County Manager's response, "the training and upgrade services for version 8.0 and Unity 2.4 will be provided to the County at no additional charge." (County Manager's response at p.1.) The OIG in the draft report stated: Cost data related to these upgrades is not yet available. While the OIG recognizes that the Post Warranty Software Maintenance Services Agreement (Appendix F of the Contract) addresses the actual upgrade itself, the County is responsible for obtaining upgrades or purchases of Third Party hardware or software required to operate the Upgrade. And should the County utilize ES&S to actually install the upgrades, the County may be subject to paying an ES&S charge for its services. [See Appendix F, Section 5(a).]*

III. SCOPE OF REVIEW

The OIG's inquiry consisted of a review of the procurement process (RFP process) and the performance of the touch-screen devices. And while the purchase of ES&S' voting system involves much more than just the iVotronic touch-screen devices, this report focuses primarily on the touch-screen machines and their performance relating to tri-lingual ballots and the opening polls procedure, commonly referred to as "boot-up time". This report addresses the stated capabilities, the expected capabilities and the actual performance of the touch-screen machines. In doing so, this report also covers ES&S' written proposal in response to the RFP, including the oral presentation and statements made by the vendor in support of its product, and contractual provisions relating to warranties, the performance bond and liquidated damages. These two subject areas, procurement and performance, necessarily required an examination of a host of related issues, including voting system certification standards, hardware

components of the iVotronic, and the dependent, prospective relationship between the County and the company, ES&S.

In conducting this review, the OIG examined volumes of documents on file with the Florida Division of Elections, Bureau of Voting Systems Certification, Miami-Dade County's Department of Procurement Management (DPM) and the County's Elections Department. OIG representatives have also spoken with staff members of the same aforementioned agencies.⁴ The OIG has contacted other Florida counties that purchased ES&S' touch-screen equipment, and received documentation for comparative purposes. OIG staff studied the procurement process by reviewing all available information including the proposals, and thoroughly reviewed countless hours of selection committee meetings, presentations made to the Selection Committee, and negotiation sessions between the County and ES&S.

IV. ISSUES - OBSERVATIONS AND FINDINGS

A. VOTING SYSTEMS CERTIFICATION

"No electronic or electromechanical voting system may be used by any county or municipality in Florida unless the Division of Elections has issued a certification or provisional certification of the voting system's compliance with Florida's requirements pursuant to the application and evaluation processes described in this document." Florida Voting Systems Standards (FVSS).

The Bureau of Voting System Certification

In a nutshell, the Florida Election Reform Act of 2001 outlawed the use of punchcard voting equipment and only authorizes the use of touch-screen DRE devices and/or marksense paper ballots in conjunction with a marksense scanner, a.k.a. optical scan voting equipment. The Florida Department of State,

⁴ The OIG has not contacted ES&S regarding the contents of this draft report. On several occasions, OIG representatives have spoken with ES&S' Miami-Dade County "Project Manager." However, we have been advised that all OIG requests for information must be directed to the company's Miami-Dade County lobbyist. The OIG finds this objectionable. The OIG welcomes meeting with ES&S, and if ES&S wishes to discuss the contents of this draft report, it should contact the OIG directly.

Division of Elections, Bureau of Voting Systems Certification is charged with certifying voting systems in accordance with the FVSS.

The FVSS, which is available via the Internet, sets forth the minimum standards of voting systems and establishes testing and certification procedures to determine if the required minimum standards have been met. For example, these standards speak to ballot definition, consolidation and verification of precinct results, verification at the polling place, voting functions, voting tabulation, obtaining various reports, auditability, and data integrity. In other words, the legislation requires minimal standards by which the state is, therefore, able to certify election results.

But what the FVSS does not evaluate is the ease and operation of the voting system, whether the machines boot-up quickly enough to allow for the polling place to be opened within one hour (or any given length of time), how quickly the machine is able to tabulate results, and the speed in which precinct reports can be produced. There are no minimum standards regarding the speed of the processor, or how much random access memory (RAM) or read only memory (ROM) each machine must have. In the case of optical scan equipment, there are no standards regarding the speed in which it takes to scan and read a marksense ballot. Under the FVSS, an optical scanner could take, for instance, five minutes to scan one ballot, so long as it is accurate, reliable and detects errors, undervotes and overvotes.

During the course of our inquiry, we determined that County officials have critical misunderstandings of exactly what the term “certification” means, and therefore, have over-relied on the fact that a product is “certified.” There is the notion that if the product is “certified,” it somehow means more than what it is. Simply put – certification means that the product (the voting system) may be used in the State of Florida. Certification is by no means a product endorsement; it has no bearing on whether it is a good product. Certification also has no bearing on whether the product will perform to the needs or expectations of any county, small or big. It does not address whether a system is “state of the art technology.” Most importantly, certification does not test or verify the representations -- sales pitch -- made by the vendor. A product can be certified under the FVSS even if none of the vendor’s representations to local elections officials come true.

During the course of this inquiry, the OIG has heard a variety of excuses on the part of County staff to explain the deficiencies in the iVotronics, including comments on certification, such as “but the State certified it”, “we’re relying on the State’s certification”, “the State should have known” and “the State should test to see if the polling place can be opened in one hour.” The bottom line is that the State is not responsible, under current law, to evaluate boot-up times. Pointing fingers at it, so as to fix responsibility, is unacceptable.

Even as late as April 2003, in a recent County staff meeting which discussed among other issues, the anticipated state certifications of firmware versions 7.5 and 8.0, the issue of state certification was still not understood. The questions were raised: “What does the State certify? What does certification mean?” The comment was then voiced that if we [County staff] still have questions about what certification means, then we must have relied on our own interpretation. The OIG agrees with this statement. It is highly recommended that County staff become independently knowledgeable of the contents of the FVSS, and not rely on the vendor to pass messages back and forth between Miami-Dade elections officials and the State’s Certification Bureau.

With regards to the recently submitted request for certification for iVotronics firmware version 7.5 (ES&S Release 4.3), and the illusive 8.0, the OIG strongly cautions County staff not to be overly reliant on “certification.” Certification is, of course, a prerequisite to using the firmware modification. However as previously illustrated, certification does not verify the marketing representations of the vendor.

Certification and the Tri-Lingual Requirements of the RFP

Section 2.1 “Requirements and Services” (requirement No. 9) of the RFP required that “Ballots must be in available in English, Spanish and Creole.” Additionally, Section 3.2 “Contents of Proposal” subsection (5)(i) “Technical Information” required the proposer to submit a statement regarding language availability. In response to meeting these requirements, ES&S stated:

“Although we comply with this requirement through our ability to format English/Spanish and English/Creole units that can be used simultaneously in the same precinct, we are currently working on software modifications to deploy units that have three language

capabilities. These software modifications will be completed by beginning of next year, and prior to May 2002 implementation timeline.

In the event that a special election would be called prior to the time that these software changes would be implemented, ES&S will ensure that citizens in Miami-Dade County can vote utilizing any three of the language formats by providing sufficient English/Creole and English/Spanish units at designated precincts that would be clearly labeled so that individuals needing these specialized language services will have the ability to utilize the appropriate units.”⁵

The issue of tri-lingual ballot certification was extensively discussed among RFP Selection Committee members even prior to the oral presentations. During the second Selection Committee meeting of October 10, 2001, it was acknowledged that ES&S was not certified in a tri-lingual ballot, but it was determined that ES&S met the RFP requirements because it could deploy English/Creole booths in the same precinct utilizing English/Spanish booths.

A few days later, during ES&S’ oral presentation to Selection Committee members, ES&S touted that they could do ballots in a variety of languages: English, Spanish, French, Chinese, Vietnamese, Japanese, Korean, etc. When asked about Creole, ES&S representatives stated that they were still working on Creole, but that they had the capability to put any language requested on the device.

While a tri-lingual ballot was eventually certified by the State (Release 3.0 on May 7, 2002 and Release 4.0 on August 7, 2002), the above excerpts are interesting in light of recent discussions regarding multi-lingual options. Miami-Dade County Elections Department officials recently explained during a staff meeting on April 1, 2003, that the utilization of a bi-lingual English/Creole ballot would necessitate an additional state certification, as ES&S had only certified its English/Spanish text-based ballot. Therefore, prior to the September 2002 Primary, the option of utilizing two sets of touch-screen devices for certain Creole-speaking precincts, in favor of waiting for the tri-lingual ballot certification,

⁵ ES&S Proposal, dated September 21, 2001, pg. 31 in response to RFP requirement No. 9. See also ES&S’ response to subsection (5)(i) on pg. 41 of its proposal, which substantially makes the same response.

was abandoned. Additionally, it was rationalized that future deployment of both English/Spanish and English/Creole booths would be logistically difficult because it would still require a certification for a bi-lingual English/Creole ballot and would necessitate two sets of PEBs for two sets of bi-lingual touch-screen booths. Allocation determinations would also have to be made to ensure that enough English/Creole PEBs are distributed to the designated precincts requiring the availability of all three languages.

Should the above analysis be correct (a new certification for English/Creole was necessary⁶), then it raises the question of whether or not ES&S did, in fact, meet the language requirement of the RFP. Could ES&S have deployed both English/Spanish and English/Creole booths in the same precinct? Furthermore, should Miami-Dade County find that the software upgrades do not provide an adequate work-around to the boot-up problem, the County may want to consider the original option of deploying both English/Spanish and English/Creole booths in certain precincts. Under this analysis, this may also require a new certification, albeit for a bi-lingual text-based ballot in English/Creole.

B. THE PERFORMANCE BOND AND WARRANTIES

Two main contractual points took center stage during the negotiation process, the performance bond and warranties. These two matters are no less contentious now, almost five months after Miami-Dade County's November general election. There has been much attention drawn to the issue of ES&S' performance bond and the step-down reduction structure of the bond. Further, the other issue being widely discussed among County staff is whether a claim for breach of warranty against ES&S can be sustained. These two devices, the performance bond and contractual warranties, are somewhat interrelated

⁶ The OIG does not know whether or not an English/Creole text file ballot requires independent certification beyond the bi-lingual English/Spanish text-based ballot.

"Any change to any component or to the configuration of the components creates a revised or new system, which must be again certified or provisionally certified before it can be used in any election." FVSS, Form DS-DE-101, eff. 4/02, p. 6. Whether or not English/Creole would require certification, even though an English/Spanish text-based ballot has acquired certification, is a question to be answered by the Bureau of Voting System Certification. It would likely depend on the file codes used to create the language set and other software configurations.

concepts but will be addressed separately in the following discussion. The OIG must stress that the our examination of only these two issues is not intended to dismiss the validity of any other legal theories or remedies that might be applicable.

The Performance Bond

A performance bond is a bond given to protect the recipient against loss in case the terms of a contract are not fulfilled; a surety company assumes liability for nonperformance.⁷ In other words, it is a bond issued by an insurance company to guarantee satisfactory completion of a project by a contractor.⁸

Performance Bond Terms and Reduction Schedules

The County's Request for Proposal (RFP) required that the successful company deliver a performance bond in the amount of 100% of the value of the contract. The terms and structure of the performance bond requirement were plainly laid out in Addendum No. 2 to the RFP, issued on September 19, 2001.

“Q2. What is the term of the Performance Bond?

A2. The Performance Bond shall be applicable through the first major Countywide general election with declining Bond requirements (balances) dictated by the attainment of milestones leading up to the first major Countywide general election. The Performance Bond will be released as follows:

- ❖ 50% upon delivery and acceptance of all equipment; including testing, installation, integration and training
- ❖ 25% upon certification of the First Primary Election to be held on September 10, 2001 [sic 2002]
- ❖ 25% upon certification of the General Election to be held on November 5, 2001 [sic 2002] ***and resolution of any litigation related to the performance of the voting systems.*** (Emphasis added).

⁷ Source: WorldNet ® 1.6, 1997 Princeton University.

⁸ Source: www.investorwords.com.

Having submitted its pricing proposal separately, ES&S in its written proposal took exception with the County's performance bond structure. The relevant portion of ES&S' exception stated:

“ES&S is willing and able to furnish a performance bond to the County is [in] an amount equal to 100% of the value of the contract. It is usual and customary to provide a bond equal to the value of the contract and for a length of one year. ES&S has also furnished other customers with annually renewable bonds when multi-year contract is involved.”

The negotiated performance bond provisions, pursuant to the final contract, generally followed the terms laid forth in RFP Addendum 2, which tied it to the delivery and system acceptance of the equipment and certification of the primary and general election results by the State.⁹ However, the final contract article contained two significant changes. First, instead of the less 50%, less 25%, less 25% reduction schedule outlined above, the final contract's reduction schedule was changed to a 25% reduction, 50% reduction, and a final 25% reduction to zero. Furthermore, the qualifying phrase from the last step down *“and resolution of any litigation related to the performance of the voting systems”* was omitted.

The face amount of the bond was \$23,314,258, which represents the Total Net Sale, less \$1,176,089 for the “Three (3) Year Post-Warranty Maintenance and Support Program” and less a \$50,000 itemized charge for the “Performance Bond Charge.”

According to DPM staff, the performance bond itself, obtained through Zurich American Insurance Company, cost \$349,714. The County actually paid \$50,000 (itemized expense) and according to DPM, ES&S paid the difference of \$299,714. DPM staff also stated that the performance bond's actual cost is customarily borne entirely by the County and that this arrangement came about

⁹ As part of the RFP, the County included its boilerplate of proposed contract terms. The performance bond is expressed in Article 15 of both the County's proposed contract and Article 15 of the negotiated contract. The County's proposed Article 15 did not contain the specific terms of the bond or the step down schedule. Apparently, this whole section was added as a result of the negotiations.

as a result of negotiations. In a separate savings document, County management attributed a savings of \$365,000 in performance bond costs.¹⁰

The bond's intended purpose was to pledge security for the receipt and proper working conditions of the 7,200 iVotronics at various delivery intervals and protect the County's \$23 million dollar investment. The first 25% step down of the performance bond's value (reduction to 75% - \$17,485,694) occurred after delivery of some equipment and successful testing under acceptance testing criteria. **According to the Elections Department, the first step down occurred on August 28, 2002.**¹¹ After the primary elections were certified, the performance bond was further reduced by 50% to the 25% remaining. When the November 5th general election was certified, the performance bond was finally reduced by 25% to zero and was extinguished.

The obvious defect in the three performance bond reductions, structured by the County, was that each was contingent on an absolute milestone. The first milestone was based on the delivery and acceptance of the equipment. The second and third milestones were the State's certification of the election results, regardless of any operational problems experienced by the County. Why the language regarding litigation relating to performance was omitted from the final contract is unclear.¹²

More importantly, the step down schedule was structured to be exhausted only ten months after the bond was secured. In explaining the rationale for agreeing to such a short bond retention period, DPM staff stated that it is their

¹⁰ When asked how the \$365,000 savings figure was derived, it was explained to the OIG that at the time they were drafting the agenda item, the price of the bond was much higher. At the time the actual bond was secured, the costs had decreased due to market conditions. The OIG requested copies of worksheets or other documentation that shows the actual cost of the bond and how the savings figure is derived. No documentation has been produced, only the explanation recited above.

¹¹ ***In its draft report, the OIG cited the date of April 3, 2002 as the date of the first step down. That date was incorrect. The OIG had been provided with that date via email correspondence from the Elections Department and DPM staff. The County Manager's response noted the error and has correctly pointed out that: "The first step down occurred on August 28, 2002, after final delivery and acceptance testing of all iVotronic equipment, which occurred on August 6, 2002."***

¹² The language was not included in the County's proposed contract boilerplate, as none of the performance bond terms were included. A draft copy of the contract, containing redlining and other edits, also did not include the language.

position that the function and usefulness of a performance bond is extinguished upon the acceptance of contract deliverables and with the knowledge that the product works. According to County staff, certification of election results by the Florida Division of Elections demonstrates that the system works. According to DPM staff, the performance bond really does not serve any usefulness after the election is certified; it is superfluous. Ironically, on the other hand, under the performance bond structure advocated by ES&S in its exception to the RFP, the County would still have a portion the performance bond in place, albeit having paid a higher premium for the bond. *DPM staff emphasized that warranties, not the performance bond, are what the County usually relies upon to protect itself against deficiencies that arise out of equipment that does not perform to the County's expectations. DPM staff further cited other remedies such as allowing the company to cure the problem(s), returning the product to the vendor, and pursuing litigation.*

While warranties are a valued contractual protection, in many instances, other Florida counties, nevertheless, negotiated more stringent protection for their investments in the iVotronics by way of performance bonds. Among other ES&S Florida clients, their performance bond structure reflected what ES&S initially offered.

For example, Pasco County negotiated a bond that was valued at 125% of its contract price, or \$6,094,043. The cost of the bond to Pasco, as a line item expense,¹³ was \$45,660 and remains effective until the warranty period ends, which happens to be December 31, 2004. The bond is renewed annually and may be reduced if Pasco and ES&S mutually agree to an amount that reflects the value of the goods and services to be provided or being provided by ES&S.

Lee County has a similar agreement. Its performance bond is valued at 100% of the total net sale or \$5,779,258. The bond's cost to Lee County, as an itemized expense, was \$85,408. The bond remains effective until the warranty period ends on December 31, 2004. Like Pasco, the bond is renewed annually and may be reduced if Lee County and ES&S mutually agree to reduce it based on the value of remaining goods and services.

¹³ See Exhibit C. *While the performance bond cost to each county was listed in the pricing schedule as a line item charge, the OIG does not have the cost data for the actual performance bond cost. Additionally, as explained in Exhibit C, the matrix does not detail the remaining performance bond balances of the other Florida counties.*

On the other hand, Broward County's performance bond was only effective through final acceptance testing of the system. Immediately after the performance bond expired, a maintenance bond valued at \$375,000 became effective through the warranty period, which ends January 1, 2004. The line item cost to Broward County for this bond was \$10,680.

In addition to Miami-Dade and Broward counties, there are 10 other Florida counties that have contracts with ES&S. The OIG contacted these counties, as part of the ES&S Florida Users Group, and requested copies of their contracts for comparative purposes. Of the counties that responded, many of those having performance bonds have structured their bonds to remain in effect until the warranty period ends. A detailed comparison report is attached as Exhibit C.

After carefully examining the County's performance bond structure finally negotiated with ES&S, and comparing that structure to those bonds negotiated with ES&S by other Florida counties, it is the OIG's conclusion that the County's negotiated bond provisions were inadequate and the result of a bad business decision. The inadequacy is impacted by the illusive first step down criteria of "acceptance testing." This is especially true in Miami-Dade's situation because the County's contract with ES&S was premised on a future deliverable – the tri-lingual ballot.

Performance Bond – Acceptance Testing

Another flaw of the County's performance bond structure is the first step down, which is tied to acceptance testing of the system. The Miami-Dade County Acceptance Criteria is contained in Appendix H of the contract. Under Section 1, General, it states: "Acceptance testing shall verify the basic condition and operability of the election system. All acceptance testing shall be based on the then-certified configurations of equipment, firmware and software."

Everyone involved in the Miami-Dade contract knew that ES&S was still working on getting its tri-lingual ballot certified. ES&S, in its written proposal, stated that this would be accomplished by May 2002. The contract's liquidated damages provision gives the date of May 17, 2002. *The County's contract was premised on a future deliverable, yet to be certified.*

The first-step down occurred on August 28, 2002, and was based on testing performed using iVotronic firmware version 7.2.5.0.¹⁴ This firmware version is for a tri-lingual ballot that was certified in early May 2002. However, it was this version's ballot design that was rejected by the County because of its dual column layout design. ES&S' single column tri-lingual ballot (Release 4, Firmware Version 7.4.5.0) was eventually certified on August 7, 2002. According to the County Manager's response, acceptance testing was concluded on August 6, 2002. In other words, the County, in addition to testing the text-based firmware, tested the equipment using a firmware version that was for all practicality rejected by the County. The version ultimately utilized by the County was only days away from certification. It has been explained that the difference in boot-up times between Version 7.2.5.0 (dual column) and Version 7.4.5.0 (single column) is significant as the dual column layout was intended to minimize the total number of screen pages needed in order to fit the whole ballot.

As Miami-Dade County found out through experience, boot-up time is an integral aspect relating to the basic condition and operability of the system.

System(s) Warranties – Warranty for Fitness of Intended Use

As explained by DPM staff, true performance deficiencies are protected against by way of contractual warranties. And, in the case at hand, where the protections of a performance bond may have been exhausted, the only true contractual remedies lay in the warranties. Upon review of the proposed contract boilerplates from both parties, and from review of the negotiation audiotapes, the OIG acknowledges that County staff fought hard to maintain that certain warranty provisions were contained in the final negotiated contract.

The contract itself contains many types of warranties. With regard to the eventual problems associated with excessive boot-up times and reasonable expectations of Miami-Dade County, the "System(s) Warranties" provisions, contained in Article 27 of the Contract, appear to be the most relevant.

¹⁴ *In its draft report, the OIG cited the date of April 3, 2002 as the date of the first step down. That date was incorrect. The OIG had been provided with that date via email correspondence from the Elections Department and DPM staff. The County Manager's response noted the error and has correctly pointed out that: "The first step down occurred on August 28, 2002, after final delivery and acceptance testing of all iVotronic equipment, which occurred on August 6, 2002."*

By way of the advertised RFP, the County included its proposed general contract terms, which included a warranty for “fitness for intended use.” By way of noted exceptions to the RFP, ES&S included in its proposal an objection to the proposed Article 27, System(s) Warranties, paragraphs (a) and (b). The exception stated:

“ES&S does not provide warranties of fitness for a particular use, as described in subsection (A). ES&S is willing to provide the System warranties described in the remainder of this Article 27 for a two-year period; provided, however, that the remedies for breach of warranty shall not be applicable if the warranties are breached due to acts, errors, or omissions of the County, its agents or employees or to events beyond ES&S’ reasonable control.”

Furthermore, ES&S provided a copy of a “Sample Agreement” (also entitled “Master Purchase Agreement – General Terms”) as part of its RFP submission. Article 3.2 of the ES&S sample agreement lays out the warranty structure preferred by the vendor. Article 3.2(a) spells out the vendor’s preferred equipment and software warranties, Article 3.2(b) is the system warranty, Article 3.2(c) is for services, and Article 3.2(d) is a bold faced, capitalized disclaimer entitled “Exclusive Remedies” which states, in full:

“IN THE EVENT OF A BREACH OF SUBSECTIONS 3.2(a), 3.2(b) OR 3.2(c), ES&S’ OBLIGATIONS, AS DESCRIBED IN SUCH SUBSECTIONS, ARE CUSTOMER’S SOLE AND EXCLUSIVE REMEDIES. ES&S EXPRESSLY DISCLAIMS ALL WARRANTIES, WHETHER EXPRESSED OR IMPLIED, WHICH ARE NOT SPECIFICALLY SET FORTH IN THIS AGREEMENT, INCLUDING BUT NOT LIMITED TO, ANY IMPLIED WARRANTIES OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR USE.”

As heard on the Negotiation Committee’s audiotapes, the inclusion of fitness warranty was a contentious issue. Nevertheless, and to the credit of DPM, the final negotiated contract provision, Article 27, paragraph (a), clearly established a fitness warranty.¹⁵ It holds:

¹⁵ In comparison to other Florida counties’ contracts with ES&S that the OIG received, Miami-Dade County’s contract is the only contract that contains a warranty for fitness. See Exhibit C previously referenced for the comparative table. In fact, all the counties identified on that chart use ES&S Master Purchase Agreement as a template. Each of the contracts also contain the capitalized bold-faced exclusive remedies disclaimer cited above. The language is practically

“Contractor hereby represents and warrants to the County that Contractor has reviewed and evaluated all information furnished by the County and has made all inquiries necessary such that Contractor is fully aware of the County’s business requirements and intended uses of the System(s) as set forth or referenced in this Agreement. Accordingly, the System(s) shall satisfy such requirements in all material respects and will be fit for intended uses. ~~[[Such warranty shall expire at the end of the Warranty Period.]]~~ Based on Contractor’s analysis of the Contract Documents, the Contractor hereby represents and warrants to the County that the System(s), as described in the Scope of Services, will meet the County’s objectives as set forth in the Contract and that the Contractor is not aware of any material discrepancies among County’s objectives as set forth in the Scope of Services.”¹⁶

The OIG believes that based on this hard-fought warranty provision, the representations of the vendor, ES&S, become extremely relevant. Throughout its proposal, ES&S identifies closely with County staff, acknowledging that it, too, knows the operational requirements of the Elections Department in running a successful election.

Miami-Dade County’s Business Requirements – the iVotronics being fit for the intended uses.

ES&S’ oral presentation of its product to the Selection Committee is indicative that the company was aware of the County’s business requirements. ES&S reassured committee members that it was fully aware of the needs of a large county like Miami-Dade County. ES&S representatives repeatedly compared the iVotronic to the Votomatic (punchcard booth) system, in that the booths would be delivered to the precincts as “dumb terminals” void of any pre-programming of ballot information. ES&S stated that this is a “big deal” for warehouse staff because they would “not have to line up the machines and load

identical except that those for the last phrase “or fitness for a particular use” is omitted. Seemingly, that phrase was specially included in the proposed sample agreement that ES&S provided to the County.

¹⁶ The bold-faced type is taken from the negotiated contract. Words in double brackets [[]] are additions from the original county boilerplate. Strikethrough words were in the proposed contract but are not in the final contract.

ballots onto them.” ES&S reiterated the ease for warehouse staff, as most large counties, like Miami-Dade County, had delivery of the machines down to a science and that the warehousing and delivery mechanics of the iVotronic were no different than what was required of the original votomatics. It was orally illustrated that the iVotronics units could be palletized and delivered to the precincts seven (7) to eight (8) days before the election, where they would just sit until election morning until the pollworkers in the morning arrived to break the cases open and stand up the booths. ES&S stated that they knew Miami-Dade County delivered equipment upwards of five (5) days in advance.

ES&S also posed the scenario of what if three (3) days into the delivery schedule changes needed to be made to the ballot. ES&S reassured committee members that only the PEBs had to be re-coded, and that no changes had to be made to the iVotronics.

During its presentation, ES&S also made statements demonstrating that it was aware that “boot-up” time was a concern for election officials. In describing its proprietary firmware, Mr. Steve Bolton of ES&S is heard saying that they wrote their own operating system which is a self-contained module “that operates the system and unlike an operating system which may have to stay on all day long, you will notice that these terminals actually shut down completely, they are not in sleep mode, they are off and they power up from a dead off state, and I know most of you, unlike me [sic] like myself, power up your computer in the morning and wait for five minutes for Bill Gates to get through his routine before I can start to work and you cannot have that on an operating system ... [inaudible] so we chose to write our own ...”

Getting the ES&S iVotronic voting system to work on election morning necessitates assembling the iVotronic booths, daisy-chaining the power cords together, and booting up the machines -- loading the ballot information into each iVotronic. Using the analogy from above, if Mr. Bolton cannot wait five (5) minutes for Mr. Gates to go through his routine, Miami-Dade County surely cannot wait upwards of six (6) minutes [28 minutes for audio] for ES&S to go through its routine. And that is for only one machine.

Did ES&S know the business requirements of Miami-Dade County? According to its oral presentation, it did. Additionally, ES&S has been doing

business with the County for many years.¹⁷ As an experienced company, ES&S knows that voting equipment is usually delivered to the precincts several days in advance and it is not until 6:00 a.m. that morning, that pollworkers arrive and voting equipment is set up and made operational for voting.

In short, Miami-Dade County eventually got tri-lingual ability, but at what cost? Was tri-lingual capability, albeit with excessive boot-up times, fit for this particular use or fit for any regular elections department? Does it fit/work with the business requirements of Miami-Dade County? How many elections departments have to set up shop to activate the voting booths the night before and have to post guards outside? To what extent did ES&S know or should have known that the product that they promised for the County would not conform to the expectations that it marketed to the County? Based upon the aforementioned analysis, it is clear the fitness warranty of the contract was breached by ES&S.

C. OPEN POLLS PROCEDURE A.K.A. “BOOT-UP TIME”

In commenting on the problems that plagued the Miami-Dade County 2002 primary and, thus, were in need of overhaul for the general election, the Center for Democracy, among other things, noted:

“Compared to the normal amount of time most polling stations in the United States take to set up equipment and documents for opening, the time needed to accomplish the advance preparation was extremely high. Most of this was due to the fact that the ES&S iVotronic devices each took 8 - 70 minutes to activate – and that they had to be activated separately and sequentially. The county-wide person-hours required for such preparation was astronomical.”¹⁸

¹⁷ ES&S has had a contract with the County since 1994 for the MegaProfile Voter Registration Software, and Annual Technical Support. ES&S and/or its predecessor company was also the developers of the Votomatic punchcard voting system previously used by the County.

¹⁸ Unified Monitoring Report to the Center for Democracy, International Foundation for Election Systems Team Members, Miami-Dade County, Florida, 4-6 November 2002, p. 3.

This section of the report will examine the factors contributing to the inordinate boot-up time for Miami-Dade County's iVotronic devices. In a nutshell, these factors are that a tri-lingual ballot requires that the ballot be written using bitmapped data, which therefore requires the extra read-only memory capacity provided by the CompactFlash card. Did ES&S know of these requirements? Simply, yes -- they knew or should have known.

The requirements of bitmap and the external CompactFlash memory card to run a tri-lingual ballot

The root cause contributing to the extensive "boot-up" times experienced in Miami-Dade County's primary and general elections of 2002 is the fact that the County uses a bitmap designed ballot which requires the use of the external CompactFlash card (CompactFlash card). Unlike other Florida ES&S clientele who utilize text-based ballots, only Miami-Dade County uses the CompactFlash card in non-audio devices. These three items: tri-lingual ballot, bitmap files and CompactFlash cards are all inextricably intertwined. The real question lies in ES&S' knowledge of these requirements when it sold the iVotronics to Miami-Dade County.

As was stated under oath by ES&S representatives on October 21, 2002, to the BCC's Elections Task Force, the iVotronic text-based system is limited to only one or two languages. The graphical-based (bitmap) system must be used to accommodate more than two languages. This was also recently explained to Florida ES&S clients at a users group meeting in Ft. Myers, Florida, on March 24, 2003, that the iVotronic firmware's text file codes are unable to handle text in more than two languages. In other words, text cannot support three languages. However, these limitations were not stated in ES&S' written proposal to Miami-Dade County. The vendor only referred to its tri-lingual development as "software modifications" (ES&S written proposal at p. 33) and "software upgrades" (ES&S written proposal at p. 41 and 48). During the oral presentation, ES&S explained that it was working on a new firmware version to handle multiple languages. ES&S referred to this project as creating templates in a software program, where the "templates lay out the ballot look and feel." The company went on to explain that you could design the ballot the way you want it, and that the system will use language sets, which can place the translation of any language on top of the English. Therefore, it did not matter what language a county required, so long as the company has the language set for the particular language.

What was not explained by ES&S and conveniently left out was that Miami-Dade's tri-lingual ballot would be designed using this new firmware and that running a tri-lingual ballot requires the use of CompactFlash cards even in non-audio devices. ES&S did not explain that the addition of a third language necessitated that the file be written as bitmapped data. On the other hand, ES&S written proposal did speak of bitmaps, but only in reference to increased font sizes and font versatility.¹⁹

With regard to CompactFlash cards, the written proposal references them to the memory capacity of storing votes in separate subsystems.²⁰ Use of the CompactFlash cards as additional ballot and language memory capacity for non-audio devices was non-existent in the proposal. Moreover, ES&S representatives affirmatively assured Selection Committee members that the extra memory provided by the removable compact flashes would not be necessary for non-audio devices. This discussion was directly related to the discussion of multi-language capacity.

In its oral presentation, the vendor repeatedly touted the product as being able to handle 16 languages. Then ES&S back-tracked by saying that the software can handle only eight languages at a single time. Finally, in the same stretch of the presentation, ES&S stated that realistically, a county would not need to put more than two to three languages on the system for an individual precinct. Later in the presentation, ES&S re-stressed that the file structures can accommodate up to 16 languages, but that one would not really put more than one to two languages, English and Spanish, on a machine. It was acknowledged that Miami-Dade was asking for three languages and ES&S re-assured committee members that this was not considered to be a "big requirement in terms of resources" for the iVotronic. Then a statement is heard by ES&S that when one gets up to 9, 10, 12 to 16 languages, then it is lots of data. ES&S then referred to the external CompactFlash card slot and called it a "life saver."

¹⁹ "The iVotronic ballot can currently be designed using 6-14 point type. ES&S is currently engaged in the development of technology that will allow us to incorporate any sized font into the design of a ballot through the use of bitmapped data." ES&S written proposal p. 39.

²⁰ "Each iVotronic voting terminal has three independent internal Flash EEPROM's and one removable Compact Flash Card." (ES&S Written Proposal at p. 9, see also p. 62).

For the presentation, ES&S stated that the iVotronic was currently using a 16 megabyte CompactFlash card, and that they were not even using that much memory on that card, which was mainly for the audio file and some of the excess languages. ES&S stated that when you go past a certain number of languages, then you need to use the CompactFlash because there is no more memory on the board. ES&S explained the use of the CompactFlash card in positive terms stating one would not have to pay for all the memory on the motherboard, but could expand and buy more flash memory only when needed. In its oral presentation, ES&S stated that with this four to five page ballot [referring to the demonstration], without the compact flash, the iVotronic can have four (4) languages on the system and that the extra languages were being stored on compact flash.

According to an ES&S representative²¹, the iVotronic model used for demonstration during the oral presentation was a graphic-based system, which was not state certified. The ES&S representative also stated that the ballot design used during the demonstration was the ballot design that was eventually certified by the State. First, the OIG is troubled that ES&S would demonstrate a system to the Selection Committee without affirmatively disclosing that what committee members were viewing was not a state-certified system. Second, during the oral presentation, ES&S never explained to committee members that they were viewing a “graphics-based” system, as opposed to a text-system. Graphics/bitmap was explained to the Selection Committee as something that the company was developing to create “a new look and feel to the ballot” -- not a version that they were currently viewing.

On the one hand, the system that ES&S demonstrated (“showed for sale”) in the oral presentation was not State certified. On the other hand, when questioned by the BCC Task Force about the lack of County staff input into the tri-lingual ballot design (e.g., two column vs. single column template), the ES&S representative stated that “actually, the State’s certification office does not endorse the review of versions that aren’t certified within the State, with clients, and they actually request that we not make pre-certified versions available to clients in advance.”²²

²¹ These statements were made under oath to the BCC Elections Task Force on October 21, 2002.

²² Statement made under oath to the BCC’s Elections Task Force on October 21, 2002, in response to questions asked by Commissioner Dennis Moss.

Having just heard the presentation regarding the compact flash, Selection Committee members are heard asking about the required lead times to burn the compact flashcards. ES&S explained that the actual “burning” or copying of memory is very fast and that the County would only have to burn approximately 700 flash cards. While no actual number of days or hours were cited by the company as adequate lead-time, it was positively stated that the only terminals that need flash cards are the audio iVotronics. This statement was made even though a graphics/bitmap ballot was demonstrated to the Selection Committee and the demonstration model required the use of a CompactFlash card.

Finally, incorporated in the negotiated contract are the liquidated damages provisions which discuss the tri-lingual ballot. In fact, Article 51 Liquidated Damages, paragraph (a) Active Candidate Touch Area, is the only place in the contract where the tri-lingual ballot is discussed. The relevant portion states:

(a) Active Candidate Touch Area. Contractor represents and warrants that the System is currently fully certified by the Division of Elections for use in the state of Florida using firmware that includes full bar touch-screen functionality for a 15 inch screen unit (the “Existing Firmware”) but that does not include all the “Active Candidate Touch Area” features. For purposes of this Agreement, the “Active Candidate Touch Area” means a configuration of software functionality which includes the following features: a 15-inch screen and software/firmware that provides a full color, bit map full bar touch-screen functionality (backlighting and a large red X indicating to the voter which selection was made; approximately $\frac{3}{4}$ inch high bold print; choice indicated by touching anywhere within the box surrounding the candidate name or question posed), ***will function in English, Spanish and Creole languages at the voters’ choice and able to function in as many as ten languages (which may require adding data capacity at County’s expense if more than English, Spanish and Creole languages are required by County).*** Contractor agrees to proceed diligently to obtain certification of the version of the Firmware containing the Active Candidate Touch Area features (the “Enhanced Firmware”) by no later than May 17, 2002. (Emphasis added).

As clearly gathered from the written proposal, oral presentation and even the contract itself, ES&S marketed its product to the County from the standpoint that CompactFlash cards were not needed, even in light of the County’s requested tri-lingual ballot. After extensive review of this issue, the OIG

concludes that ES&S knew that a tri-lingual ballot would have to be created through the use of bitmapped data and, thus, would have to be supported by employing additional memory capacity through the addition of the external CompactFlash cards despite the fact that ES&S represented to the County that flash cards would not be necessary.

The vendor knew or should have known that three languages required bitmap.

Text files are written based on font sets (character sets). Bitmap is defined as: “A representation, consisting of rows and columns of dots, of a graphics image in computer memory. The value of each dot (whether it is filled in or not) is stored in one or more bits of data. For simple monochrome images, one bit of data is sufficient to represent each dot, but for colors and shades of gray, each dot requires more than one bit of data. The more bits used to represent a dot, the more colors and shades of gray that can be represented.”²³

For example, the word “**WORD**” is not written as a series of letters but instead is coded as a series of dots, densely packed together to form a picture that resembles: **WORD** . “Optical scanners and fax machines work by transforming text or picture on paper into bit maps.”²⁴

By way of the first iVotronic receiving state certification, ES&S submitted extensive materials to the Bureau of Voting System Certification in April 2001. One particular section of the submittal package is entitled “Functional Description: ES&S iVotronic 2000 Precinct Counter, Version 2.8, dated 04/26/01.”

This section represents a high level overview of the iVotronic system and covers such topics as iVotronic hardware configuration and Bitmap Representation. In this document, it states that: IVotronic can display a ballot face in either one or two ways: “As a text (in legacy mode) or as a Bitmap. Graphics mode is invoked via a command in the ballot-definition text file,

²³ Source: www.pcwebopadia.com.

²⁴ Source: www.pcwebopadia.com.

provided CompactFlash is present and detected by the iVotronic console.”²⁵ In various sections of this document, it explains that while the first two languages, English and Spanish, may be created in text format, any third language, or subsequent language, must be written in bitmap.²⁶

Apparently, ballots can be defined as either a text based ballot or graphics based ballot. When using the text-based ballot, the first two languages, assumed to be English and Spanish, are coded as text. Any language beyond the first two are “assumed to require bitmap representation.”²⁷ Using the second type, a graphically represented ballot, all languages require bitmap representation. Thus, languages one and two will be represented through bitmap as well as language three and beyond.²⁸

In short, the third language under either version must be written in bitmap. As earlier mentioned, ES&S told its Florida clients in a recent users group meeting that the file structure of the text ballot does not support more than two languages. However, this document, submitted to the state as part of its application seeking certification, demonstrates that ES&S knew of these limitations at the time it submitted its written proposal, made its oral presentation and negotiated a contract with Miami-Dade County. By knowing this limitation, should ES&S have known that bitmap created ballots required the memory support of a CompactFlash card? We believe the answer is clearly yes.

²⁵ Functional Description: ES&S iVotronic 2000 Precinct Counter, Version 2.8, dated 04/26/01, p. 28.

²⁶ See p. 28, wherein it states: “Bitmapped ballot faces are those which are defined as languages 3 – 15. Ballot languages 1 and 2 are reserved for legacy, text based ballots.” VI. Votronic Application: Graphical Display of Bitmap Ballots, subsection B. Control Parameters. See also p. 30, which notes, “*Remember: Language One and Language Two are text-based. Language Three is the first bitmap-represented language.”

²⁷ The passage, which precedes a coding example, in full states: This section [VII. Ballot Definition: Text File Representation of a Ballot Face, Subsection B: BDF Definition Introduction, Textually Represented Ballot (v1.5x) // Language] defines multiple bitmapped-displayed languages as well as text-based languages. As many as 15 different languages can be defined in total. The first language is assumed to be in English, the second language is Spanish. These two languages are assumed as supported as Text-based. All languages beyond the first two are assumed to require bitmap representation. Hence, the display name will be substituted by a bitmap file reference name. This will accommodate bitmap-representation for symbolic-character languages and ADA large letter display fonts.”

²⁸ Functional Description: ES&S iVotronic 2000 Precinct Counter, Version 2.8, dated 04/26/01, p.46

There is not enough flash memory for bitmap in the absence of a CompactFlash card.

The amount of flash memory (EEPROM – electronically erasable programmable read-only memory, a.k.a. flash memory) storage on the iVotronic is relatively small.²⁹ Additionally, the PEB itself only holds 2 megabytes of flash memory. And according to the ES&S Functional Description Document: “All non-textual ballot information are to be stored in CompactFlash in raw ‘bmp’ format. All graphics are to be stored as variable dimension, 8-bit (256 color) depth. Only one exception exists: 75 x 75 pixel party representations are to be stored upon the PEB.”³⁰ While it was explained that the CompactFlash module was intended to be used to store voice (ADA) files, image data (bitmapped) files were also intended to be stored on the compact flash.³¹ In other words, knowing that any third language had to be written in bitmap, and knowing that bitmap files had to reside on the CompactFlash card, ES&S knew that the County had to utilize CompactFlash cards, even in non-audio machines. This is contrary to what ES&S stated in its oral presentation.

ES&S affirmatively reassured Selection Committee members that only the audio iVotronics required CompactFlash cards, even with a tri-lingual ballot. As written in the contract, previously referenced, only going beyond the three languages of English, Spanish and Creole would require adding extra data capacity.

²⁹ The iVotronic is equipped with four internal EEPROMs, which are either 2 or 4 megabytes of memory each. As per the proposal, ES&S stated that the iVotronics contained 2-megabyte EEPROMs. According to other documentation, ES&S states that the EEPROMs can be upgraded to 4-megabyte modules, for a maximum of 16-megabyte flash memory capacity. Two EEPROMs are socket mounted (may be removed). The other two EEPROMs are fixed to the motherboard. One socketed EEPROM serves as holding the “system BIOS, boot-loader, and main application programming.” (Functional Description: ES&S iVotronic 2000 Precinct Counter, Version 2.8, dated 04/26/01, p.6) The other three EEPROMs holds all the election data, i.e. the votes/ballot images. These three flashes are referred to as the three memory chips in ES&S’ proposal. The claim that the iVotronic can be expanded to 16-megabytes is illusive, because three of the EEPROMs serve the same purpose and function to back up each other.

³⁰ Functional Description: ES&S iVotronic 2000 Precinct Counter, Version 2.8, dated 04/26/01, p.11.

³¹ Functional Description: ES&S iVotronic 2000 Precinct Counter, Version 2.8, dated 04/26/01, p.7.

For the Miami-Dade County's November 5, 2002 General Election each non-audio compact flashcard consumed approximately 36.5 megabytes of flash memory.³² The difference in the amount of memory used by text versus graphic files cannot be underscored. For example, this document [Draft Report April 22, 2003, which is a Microsoft Word document of 39 pages, consumes 138 kilobytes (KB) of memory. The small graphic (attached as Exhibit D), takes up 322 KB of memory space. The difference between text and graphic ballots is enormous. Without bitmap, an entire bi-lingual text-based ballot can reside on the PEB.³³ Without the need for a CompactFlash card the opening polls process, a.k.a. "boot-up time," is dramatically reduced.

Boot-up time: Why does it take so long?

The time associated with booting-up of the machines is not necessarily dictated by the size/length of the ballot. It depends on how much data there is to check. In booting-up, the iVotronic is in actuality conducting a self-diagnostic to make sure all the necessary files are present on the compact flash.³⁴ It is not merely a case of downloading or copying files; it is more of a verification process. The more bits of data used to design the ballot, the longer it takes to check all the files. Obviously, one language uses less bitmap than three languages. And the more words on a ballot, the more dots it will take to represent those words as graphic images. Furthermore, the fact that the firmware resides on the CompactFlash and not on the internal flash memory of the devices also contributes to the length of boot-up time. For example, the time it takes to open a document saved on one's personal computer hard drive is much shorter when compared to opening a document from a floppy disk inserted into the A drive of

³² This is based on a duplicate CompactFlash card provided to the OIG entitled Nov. 5, 2002 General Election, Precinct 1. All three languages residing on the compact flashcard are all represented as graphics. This was for the graphic ballot only and did not contain sound files.

³³ For example, Broward County's November 5th General Election ballot was quite lengthy, containing both Florida Constitutional Amendments and Broward County Charter Amendments. Broward used a bi-lingual text-based ballot and did not need to use CompactFlash cards.

³⁴ It has been explained by County staff (as presumably explained to them by ES&S) that the new firmware version 7.5 eliminates much of the self-diagnostic checks during the opening polls procedure. This was explained to reduce the boot-up time requiring the presence of the Master PEB in each iVotronic terminal.

the computer. All of these factors, in conjunction with the 386 processor and limited working surface of one (1) megabyte of SRAM (see below), contribute to the unacceptably long boot-up time it takes to open polls in Miami-Dade County.

iVotronic Hardware System Components – the Significance of the Processor and SRAM

The iVotronic certified by the State of Florida is equipped with an Intel 386 EX 25 MHZ (megahertz) processor. The iVotronic is also powered by one (1) Megabyte of SRAM (Static Random Access Memory), which is used for general-purpose data space.³⁵

The speed of the processor affects the quickness of the machine to make decisions. During the opening polls process, a.k.a. booting-up the machines, the system runs a series of internal checks to make sure all the necessary files are present and not damaged. The more powerful the processor, the “smarter” the machine is and the machine’s decision-making capabilities are enhanced. The more files that the machine has to check during this routine, the longer it takes. A more powerful processor still has to check the same number of files but can do it quicker.

The amount of SRAM³⁶ is analogous to the working surface of data space in the machine. If the space is small, only a small amount of data can fit on the working surface at a time. As it relates to the opening polls process, while the system is “booting-up” and going through the routine of checking all of its files, only what can fit on the “working surface” can be checked by the processor.

To illustrate with an analogy, if you are cooking in the kitchen and prepping vegetables, etc. and your kitchen counter space is very small, you find that you can only take a few items out of the refrigerator at one time. You prep those items, and go back to the refrigerator for more. It winds up taking many trips back and forth from the refrigerator to complete prepping the meal. With a larger surface area, you can place more items on the working surface, thereby minimizing the number of trips to get more “files.”

³⁵ Functional Description: ES&S iVotronic 2000 Precinct Counter, Version 2.8, dated 04/26/01, p.6.

³⁶ The OIG acknowledges the difference between RAM and SRAM. SRAM does not affect the size of the working space, but it assists in making it more efficient.

It is common for owners of home computers to increase the amount of RAM in their units.³⁷ This is especially apparent as Internet connections become faster using broadband, cable and DSL access. One can download files faster, however, the real speed in which one operates is still dependant on the size of the working surface, in other words, the amount of RAM.

Both the processor speed and SRAM capacity of the iVotronic was neither disclosed in ES&S' written proposal in response to the RFP nor was it disclosed during the oral presentation before the Selection Committee. As heard from the audiotapes of the presentation, no one asked these questions during either the selection or negotiation sessions.

Two separate reports have addressed the issue of processor speed. The Center for Democracy Report and Miami-Dade Police Department's After Action Report both allude that the current processor is too slow and argue in favor of upgrading the machines to make them more powerful, thereby speeding up the opening polls procedure. Unfortunately, and perhaps unknown to those making this recommendation, the 386 processors cannot be upgraded without replacing the whole motherboard. First, the Intel 386EX 25MHZ processor is not pin-compatible with any faster processor, i.e. a 486 or Pentium 1 through 4 Series. The number and configuration of pins surrounding the 386 processor is unique to itself, thereby precluding the upgrade-ability of the machine. Second, the Intel 386EX 25 MHZ processor is soldered onto the motherboard, making it virtually impossible to replace.

As for the very small amount of SRAM, it too is directly attached to the motherboard. Unlike home computers, where one can install more RAM by slipping it into a slot, there are no slots on the motherboard to add more SRAM or RAM. Including the limited flash memory (EEPROMs) internal to the iVotronic, the machines the County purchased are hardly state-of-the-art-technology.

The State Bureau of Voting Systems Certification, in its recent report on the qualification testing of firmware Version 7.5 and 7.5.1, touched on the

³⁷ Both ES&S and the County Manager's response are critical of the OIG report in that it assumes that an actual comparison is being made between the iVotronic and home personal computers. This is completely misplaced. Our references to home PCs are merely to illustrate for the non-computer experts the function of the hardware parts, e.g., the processor, RAM, and ROM. The OIG never intended nor does it equate the functionality of the iVotronic to a personal computer.

processor's significance to the boot-up/checking process of the opening polls procedure. Most interesting is the State's comments contained on page 3, Section 3, of its report regarding the Boot/Checking Process (Exhibit I of Final Report). It states in full:

- *“During examination of these issues it was discovered that the iVotronic has no way to detect if files have been corrupted. Additionally, it became clear that the routine to detect missing files only looks for files which are needed for the ballot style on the PEB.”*
- *“Previously we have been told that the long boot times (for example with 7.4.5.0) because the iVotronic is checking every file and that the upcoming version 8.0.0 would speed up the process by only checking those files which it needs. Accordingly this leaves a very good question for ES&S on what is really happening to speed up the process in the next release.”*
- *“An additional question is that, given the processor speed of the machine and the fact that the firmware is only checking for the presence of files and not their content, why does the routine which checks files take such a long time?” (Emphasis added).*

As the Certification Bureau appears to question the relationship between processor speed and the now-clarified limited checking process (only presence, not content), the OIG too believes that the iVotronic processor speed is of significance. In its response, ES&S attempts to dismiss the observations of the Center for Democracy and the Miami-Dade Police Department regarding processor speeds, “as neither organization is technology centered. “ (ES&S Response at p. 42.) While it is neither organization's primary function to assess the technological functionality of voting equipment, the observations of the State's Bureau of Voting Systems Certification are worth notice.

Compact Flash Cards

According to DPM and Elections staff, the County was caught completely off guard when it came to the CompactFlash cards. Elections Department staff recalled that at some point ES&S project management team members told staff that they should be expecting more compact flashcards to be delivered. Elections Department warehousing staff recalled receiving shipments of extra compact flashcards, but did not really know what the extra flashcards were for. The CompactFlash cards just showed up. As explained to the OIG, Elections staff knew that the audio iVotronics required CompactFlash cards but with respect to the extra shipments of cards, they waited for ES&S' instruction on what they were for and what they should do with them. When asked by the OIG of the approximate dates of shipments received [for the extra flashcards], Elections staff was unable to pinpoint dates but stated that it was a few / a couple of months prior to the primary election.³⁸

When asked about the process of "burning" or copying information onto the CompactFlash cards, Elections staff explained that for non-audio devices, one master CompactFlash card was made. From that master, a set of extra masters were made. Those masters, in turn, were used to burn all (several thousand) of the flash cards for all the regular iVotronic machines. Each flashcard is the same, not precinct specific, containing the complete system ballot and the language sets. The PEB, on the other hand, holds the individual ballot(s) for a particular precinct.

With the inclusion of the CompactFlash cards, the iVotronics are really not "dumb terminals" anymore. While the CompactFlash card for regular iVotronics is the same countywide for a given election, what was marketed to the County

³⁸ The OIG requested copies of any shipping receipts, which would assist in pinpointing the date(s) when the flashcard requirement became known. Elections staff could not recall when they were advised of the flashcard requirement and also advised that they likely would not be able to produce any receiving or inventory documentation regarding the flashcards. The OIG is troubled by this lack of documentation.

The County Manager's response states: Additionally, the Elections Department has a complete detailed inventory for receipt of the compact flashcards, which is available for inspection by the OIG upon request." The OIG did request, and were flatly told that receiving and inventory documentation was not available. Given that the Elections Department now has the documentation that was previously requested, it could have provided the OIG with that information as part of the County Manager's response. As such, the OIG again requests to be provided with the information.

was the ease for warehouse staff – that they did not have to line up all the machines and load ballots onto them. We now know what was marketed was untrue.

At present, Elections staff now has to go through a twelve (12)-step process³⁹ to load a CompactFlash card into each machine. These steps are detailed in a directions sheet prepared by ES&S for the County’s Election staff (Exhibit E). These steps include inserting the CompactFlash card in properly, inserting a test precinct PEB, going through a series of checks and verifications, and sealing the CompactFlash card slot. The directions require that the PEB be inserted, removed, and re-inserted at a particular point, and removed again (but this last step is unexplained in the directions). ES&S written instructions include the statement: *“The above information is specific and to the point. You must have this [instructions] at your workstation for guidance. This will help efficiency and focus.”* The previous representations that the design of this system makes it easy for warehouse staff has not been the warehouse staff’s experience.

As previously marketed by ES&S, the iVotronic was designed as an electronic version of the Votomatic, a “dumb terminal,” where last minute ballot changes only require correcting through the re-programming of the PEB. The infamous missing words of “Not Yet Designated,” referring to the gubernatorial candidate’s choice of running mate for Lieutenant Governor, clearly demonstrated that the process of editing last minute changes is much more complex than originally represented. As widely reported, all the CompactFlash cards had to be removed from the machines, re-burned and re-inserted into the machines. Installing flashcards in every machine, especially for a county that has over 7000 machines, is not a light requirement.

Continuing and immediate future costs associated with compact flashcards.

Apparently, ES&S did not charge the County for the extra compact flashcards that arrived months before the primary election. After all, ES&S

³⁹ These twelve steps do not include the time it takes to burn/copy the flashcards themselves. And all of this is in addition to the compact flashcards utilized in the ADA devices, which require the actual audio recording of the ballot in all three languages. While the ADA procedures were known to staff, the additional workload created by deploying tri-lingual bitmap ballots was totally undisclosed to the County.

explained to the County that CompactFlash cards were not required for any of the regular iVotronics, even assuming three languages, and that only the audio machines required them. But, in the aftermath of the primary election, when it was not clear whether there would be legal challenges to the election results, the County was forced to purchase 3,600 more flashcards. Under the circumstances at the time, the County purchased them from ES&S. According to the negotiated invoice, the County purchased 2,950 64MB and 650 128MB cards, at the prices of \$31.00 and \$60.00, respectively.⁴⁰ The County also paid for associated shipping costs.

The CompactFlash card utilized by ES&S is made by SanDisk. There is no difference between ES&S' 128 MB SanDisk versus a 128 MB SanDisk CompactFlash purchased at COSTCO wholesalers.⁴¹ Having acknowledged that the County will still require a considerable number of CompactFlash cards for future elections, DPM should seek to procure CompactFlash cards through a competitive process to enable purchase at the lowest prices. It has been relayed to the OIG that companies such as SanDisk are willing to sell its product in large quantity orders at discount prices. DPM should also research whether other government contracts for the purchase of CompactFlash cards exist, and whether the County would be able to utilize those existing contracts.

In addition to the compact flashcards themselves, flashcard burners (equipment used for duplicating compact flashcards) are needed by the Elections Department. *The County Manager's response has clarified that the Elections Department purchased and has in its possession three (3) 8-card burners and borrowed one (1) 16-card burner from ES&S at no cost to the County. The Elections Department plans to purchase one (1) additional 16-card burner prior to the General Elections in 2004. The cost for a 16-card burner presently is \$8,000.*"

⁴⁰ Market research was conducted by DPM. Prices for the SanDisk 128 MB flash card ranged from \$42 - \$65 in quotes obtained within a few days of January 28, 2003. Additional research was conducted by the OIG, as late as April 21, 2003, where an Internet search on www.pricetool.com found the SanDisk 128 MB CompactFlash card as low as \$29 (Exhibit F composite).

⁴¹ According to DPM, ES&S provides a form of warranty or guarantee with its compact flashcards, but so does SanDisk. The OIG is unsure whether ES&S' warranty goes beyond the warranty given by the manufacturer.

Elections staff explained that in a large countywide election, they can anticipate a couple of days, at most, as the timeframe that they have to work with wherein all the CompactFlash cards must be burned. The flashcards can only be burned after the complete ballot (all ballot styles and all ballot languages) is ready and the duplication process must be completed with enough time to allow the cards to be properly inserted into each iVotronic device. (See Exhibit E, previously referenced for 12-step insertion of CompactFlash card procedures). The department will have to acquire additional large capacity burning equipment. These costs were unknown and undisclosed to County staff at the time of initial procurement, even when ES&S knew or should have known that running any type of bitmap ballot would require the use of compact flashcards.

D. COUNTY STAFF MUST HAVE INDEPENDENT KNOWLEDGE OF THE SYSTEM – CUTTING OFF THE UMBILICAL CORD

ITA Test Reports and Technical Data Packages

Throughout its review process, the OIG detected an underlying attitude among County staff which demonstrated staff's unwitting reliance on the vendor and the State Certification Bureau when it came to technical matters involving the voting system. For example, as part of its written proposal in response to the RFP, ES&S submitted the Independent Testing Authority (ITA) Report completed by Wyle Laboratories with respect to the Model 150/550 optical scanners. Regarding the DRE touch-screen devices, ES&S furnished the following statement: *"Testing Documentation in the form of Wyle Laboratories Test Reports are being finalized for the iVotronic DRE system. These reports will be made available to Miami-Dade County at the time that they are published."* When asked if they received a copy of the DRE test report, staff's response was simply: "Why would we want it? That goes to the state for certification purposes."

As part of the certification procedure, vendors like ES&S must submit a Technical Data Package (TDP) for each new certification (e.g., firmware upgrade). The ITA test report is just one of many pieces of technical information that must be supplied. When OIG representatives asked whether these reports

had been provided or whether they had requested the additional technical documentation from ES&S, County Elections staff maintained that there was really no need for the Department to have this material. Their reasoning was that the review of this “theoretical” information was the State’s responsibility. It is the State’s job to see if it works, and if the State is “ok” with it, then we are “ok” with it. While the TDP is substantively loaded with technical information, as it should be, the OIG fails to see the reasons behind not wanting to view and evaluate it, particularly now that we know that the State’s certification is limited in scope.

Furthermore, as was explained by Mr. David Leahy, the County purchased the iVotronic touch-screen machines, but the real driving force behind the system is the software. By contract with ES&S, the County is licensed to use the software. The County has independent access to the software programs, however, according to Mr. Leahy, we [the County] currently do not have the independent knowledge of how to work the system.

The system that the County currently implements (ES&S Release 4.2) is completely different, and, hence, more difficult than originally anticipated. For example, the coding of ballot files must now be done in bitmap, which is more time consuming than coding text files. Additionally, with each software/firmware upgrade, County staff will be required to relearn the system. This is especially true of the magical “8.0” version which is being talked about as capable of solving all of our problems.

In any event, the County staff must direct their efforts to gain the independent knowledge of how to work the system, or as one Elections Department official remarked, “cutting the umbilical cord.” As a first step, the OIG recommends that the Department acquire technical data packages, independent test reports, etc., that will assist them in verifying the marketing representations made by the vendor. Regardless of the State’s responsibility in certifying the voting system, it is the County’s responsibility (as the purchaser) to understand how the product works and be assured that, in fact, the product does work as represented.

The County's Lack of a Maintenance Manual

During the course of this review, the OIG requested from the County's Elections Department copies of manuals received from the vendor. When asked to clarify what manuals the OIG was seeking, the OIG re-phrased its request for what would typically be considered owner's manuals for the purchase of the iVotronics equipment.⁴² The OIG received various versions of the iVotronic Operator's Manuals, with Version 7.4 being the most recent. It was explained that this ES&S document served as the "Master Manual" from which the County created individualized training manuals for the various types of pollworkers and technicians. Upon review of the Operator's Manual, the OIG gleaned that there is a document called a "Maintenance Manual." The OIG then requested this document from the Elections Department. The Elections Department told the OIG that the Department did not have a copy of the Maintenance Manual. The OIG then contacted the ES&S assigned Project Manager for Miami-Dade County to obtain a copy of the manual, who then explained that all OIG requests for material (even manuals) must be directed to the company's lobbyist.

The County's Elections Department did, thereafter, request a copy of the Maintenance Manual, only to be provided with a reply that states, in part:

"Please be aware that our company has not provided Maintenance Manuals to any Votronic or iVotronic customers in the past. For a period of 30 months from the date of successful completion of acceptance testing, ES&S will perform equipment repairs for all iVotronic machinery that Miami-Dade County purchased. *It is our recommendation that you negotiate a two to five year Hardware Maintenance Agreement with ES&S prior to the expiration of the warranty period.*" (Emphasis in original).

ES&S Memorandum in Response attached as Exhibit G.

Contrary to this statement, the Pasco County Supervisor of Elections Office has received Maintenance Manuals in both hard copy and electronic format. Moreover, Pasco County has, in electronic format, the latest version of the Maintenance Manual, version 7.4, dated July 5, 2002. At the OIG's

⁴² As the OIG's review did not include such system components as the Data Election Manager, Reporting Manager, and system server, etc., the request was more or less limited to the iVotronic itself.

request,⁴³ the Pasco Elections Office forwarded copies of the Maintenance Manuals.

Through just this one example, the relationship between ES&S and the County can be summed up in one word: dependence. Unlike ES&S' proprietary software, where the County paid a software license to use it, the County actually purchased and owns the touch-screen machines. And while we acknowledge that, at present, the County is protected by warranties and maintenance agreements, and that during the Maintenance Term no one other than ES&S or ES&S approved technicians may maintain the equipment, would not the Elections Department want to know what it takes to maintain its machines? However, as interpreted from the reply, ES&S' intention is to sell the County extended Hardware Maintenance Agreements, and not to assist the County to become self-sufficient.

Supplemental Agreements and Software Upgrades

The County's dependence on ES&S is likely increased with the advent of every new software/firmware upgrade. At the time of this writing, ES&S has submitted to the State Bureau of Voting Systems Certification an application for firmware version 7.5, however, the real talk among ES&S clients is the upcoming 8.0 firmware release (also known as Unity 2.4 Update). While firmware version 7.5 will likely only affect Miami-Dade County because it is designed to quicken the opening polls procedure, the 8.0/2.4 Update supposedly affects the system from top to bottom. Nevertheless, besides a printed "Power Point" slide presentation of the update that was shown at the recent users group meeting, there is no other product literature regarding the upgrade. The 8.0/2.4 Upgrade has not been submitted to the State for certification, yet Elections officials explain that this product is targeted for use in the presidential preference primaries (March 2004) and the general election of November 2004.

Additionally, the County's reliance on ES&S support is evidenced by a proposed Supplemental Agreement to the contract between the County and

⁴³ The OIG made its request once it discovered that Miami-Dade County was not in possession of a Maintenance Manual. At that time, the County had not received the reply from ES&S.

ES&S.⁴⁴ The proposed Supplement Agreement includes authorization for the services of an ES&S Project Manager dedicated to Miami-Dade County for a period of 210 business days, excluding County observed holidays and weekends. The cost to the County for the Project Manager's services shall be at a flat rate of \$700 per day (not to exceed \$147,000).⁴⁵

In its draft report, the OIG initially calculated that by not including County observed holidays and weekends, the supplemental consultant services would end around November 17, 2003. In its response, the County Manager's office clarified that these services would be called upon on an as needed basis and did not run consecutively. The inclusion of the wording "not including County observed holidays and weekends" is misleading as that phrase implies otherwise consecutive days. The OIG suggests that wording of the supplemental agreement be clarified to expressly state that services are on an as-needed basis.

While the OIG does not contest the fact that the Elections Department will require continued support from ES&S, the OIG questions whether and when the County will ever be able to cut the proverbial umbilical cord from the vendor. Should the anticipated 8.0/2.4 Upgrade be certified in the fall or late 2003, around or after the 210 days expiration of the Project Manager's Supplemental

⁴⁴ At a County staff meeting of April 1, 2003, the OIG was provided with a rough working draft copy for a proposed resolution authorizing a Supplemental Agreement to the contract with ES&S. A revised draft of the proposed resolution was forwarded to the OIG from DPM on April 17, 2003. At the time of this draft report [April 23, 2003], the proposed resolution is still in draft form and is incomplete.

However, by way of County Manager Memorandum to The Hon. Commissioner Betty T. Ferguson, Chair of the Elections Subcommittee, dated February 21, 2003, the County Manager apprised that: "Based on additional resources required for the November 5th election, the ES&S contract was depleted sooner than expected. We have been able to negotiate a payment of \$454,000 to ES&S for direct expenses to their two minority subcontractors. The initial request from ES&S for these expenses exceeded \$1.9 million. In addition, we will require additional service and the inclusion of additional line items for line items and supplies. The amendment will require Board of County Commissioners and appropriate Committee approval."

⁴⁵ The Project Manager is currently on board and working with the County's Elections Department, hence the retroactive effective date of January 16, 2003. When asked by the OIG about the Project Manager's current contract or whether it is under the authority of the original contract, it was explained to the OIG that at present this particular individual's rate is \$1,100 per day. *At present, ES&S has not invoiced for the Project Manager's services. However, if approved, the Supplemental Agreement would reduce the Project Manager's daily rate to \$700 but would also be retroactive to January 16, 2003. Additional funds of \$147,000 are requested for these additional services.*

Agreement, will the County require additional services for its implementation? Will there be need of another 210 days of support? If and when the ES&S Project Manager requires training on the company's new upgrades and projects, will the time spent in training (at ES&S Headquarters) be counted against the 210-day consultancy period? Instead of relying on ES&S employees to consult the Elections Department on iVotronic and Unity systems, the Department should aggressively recruit and train more qualified individuals with Information Technology (IT) backgrounds to assist the Department from within. These individuals, in turn, would be able to more effectively communicate with ES&S representatives on how to manage the existing network and implement new software upgrades. With IT backgrounds, these staff members would also be able to intelligently decipher ES&S product literature, submitted certification materials of public record, and other technical manuals in order to more effectively advise the new Supervisor of Elections. The Elections Department would then be able to assess the functionalities⁴⁶ of upgrades independent from the representations of ES&S' sales staff.⁴⁷

⁴⁶ Although the software/firmware developed by ES&S is source code protected, and the source codes themselves are exempt from the State's Public Records Law, there is an abundant amount of technical materials that should be available for inspection. The County could also insist that as a part of any agreement, that it be provided with a copy of the TDP submitted to the State for certification purposes (minus source codes) for the firmware version utilized by the County or one that the County is contemplating using.

⁴⁷ The continual sales and marketing efforts of ES&S should not be underscored. Even though we have purchased over \$24 million in product and services, ES&S continues to develop ancillary products for current ES&S clients. At the recent Florida ES&S users group meeting in Ft. Myers, Florida, the afternoon session was a sales presentation by ES&S. The items presented included iVotronic Portable Racking Systems, Gang Battery Chargers, Power Testers, and Counterfeit Ballot Detectors. Furthermore, as part of the Draft Proposed Supplemental Agreement, the ES&S Project Manager's Revised Project Manager Description includes: No. 7 "Works with ES&S Sales Team and acts as an ongoing, on-site advocate for all ESS products and services such as responding to purchasing or leasing from ESS: Additional hardware and software; Election coding; Hardware and software upgrades not included in original warranty; Production and printing of absentee election ballots; Mail-out absentee envelopes and supplies; Voice files for touch-screen equipment; Spare or replacement parts for election hardware; Additional hardware and software warranties; Additional PM time and voter registration schemes."

V. CONCLUSION & RECOMMENDATIONS

This report was intended to review the product procurement process and performance of the iVotronic touch-screen machines. The voting system purchased from ES&S has, thus far, cost the County over \$24 million dollars. Miami-Dade County bought iVotronics and we will be using them in future elections. There is no getting around that reality. We have to learn to make do with what we have. Surely, there will be upgrades to the system. However, management should not be led blindly down the path of education by a vendor who turned the 2002 Miami-Dade County elections into a live beta test site for its bitmap multi-lingual firmware.

The OIG recognizes that at present the Elections Department is experiencing a transition led by the County Manager's Business Management Team. The transition will include a new Department director and a re-organization of the Elections Department. The Department is hoping to secure additional permanent staffing positions and acquire new facilities. However, the Elections Department needs to do more than just increase in size and move to a new location. It must actively prepare for future elections.

Qualification testing for Version 7.5 took place at ES&S headquarters in Omaha, Nebraska from April 28 – May 1, 2003. The focal goal of the upgrade was to quicken the time it takes to open the polls for voting. However, testing by the State revealed that Version 7.5, and modified Version 7.5.1, had numerous “anomalies and deficiencies” which prevented their certification. At this juncture, the touch screen voting equipment purchased by Miami-Dade County in conjunction with the tri-lingual ballot and supporting firmware used by the County is incapable of allowing the polling places to be set up and opened that same morning. In other words, the boot-up times remain unacceptably long. And unless the machines are set up and booted-up the night before, polls will not be ready for voting at 7:00 am. While the State has given ES&S sixty (60) days to cure the deficiencies and resubmit the product for testing, the OIG cannot emphasize enough that County officials must face up to reality – that the County's voting system, as it stands today, requires major commitments of monetary and human resources in order to conduct countywide elections. The system has the same limitations as it did in the September and November 2002 elections.

The Elections Department must focus on long term planning solutions, logistics and support structures, including poll worker recruitment and county staffing. On-going training will be a huge factor, not only for poll workers but also for Elections Department staff. And September is only five months away. Planning must be done now and implementation must take place sooner rather than later. In other words, more action and less meetings.

The first five recommendations were included in our draft report, and they are being re-stated here without change. Recommendations six, seven and eight are new to the Final Report and have been exported from the Cover Memorandum and Summary, also dated May 20, 2003.

1. Bolster pollworker recruitment efforts, to include outreach within the corporate community, chambers of commerce, civic organizations, and other municipal government entities. Training should be immediately commenced upon identification and commitment of pollworkers, rather than waiting within sight of a pending election.
2. Reconsider the compensation policy for pollworkers to include compensation for hours spent training.
3. Identify dedicated county employees who will be deployed to support elections and commence training of these individuals immediately and on an on-going basis. The process of hands-on training should mirror the manner in which other major organizations plan and train for large-scale events.
4. Immediately identify key personnel within the Elections Department who shall assume the roles of ES&S consultants assigned to the County. The Department must be able to independently perform the job of conducting elections, from coding ballots to tabulating results, without permanent dependence on the vendor. Additionally, key personnel must be identified within the Department who can make independent judgments and assessments of issues that will financially and irrevocably impact the County in conducting elections.

5. Given the large number of existing municipalities in Miami-Dade County, and the inevitable incorporation of additional municipalities, County officials must strongly study and consider establishing one date for holding all municipal elections, recognizing that there will be requirements for specially held elections. This will alleviate a taxing burden on the Elections Department, which will enable the Department to concentrate on using its time and resources in the most efficient and cost-effective manner.
6. *The OIG recognizes that the County Manager's response includes fourteen (14) bulleted points attempting to demonstrate that it has met the OIG's initial recommendations. And while the County may be encouraged that the Elections Department has successfully conducted nine (9) small municipal elections, the OIG is not convinced that the Department is prepared for upcoming major countywide elections this fall. The Elections Department states that it has trained its own staff to become Quality Assurance Managers and Verification Specialists and has, therefore, decreased its reliance on other County departments. However, the Elections Department, even with intended increased staffing, is not large enough to assume that its own staff will be able to endure the entire responsibilities and tasks required of a countywide election involving over 600 precincts.*

The OIG reiterates its original recommendations: Act now, identify and train additional county employees, and, most importantly, gain their commitment to assist in the upcoming elections.

7. *In our final assessment, the OIG concludes the iVotronic system sold to the County is not fit to meet the intended use and elections-based business requirements of Miami-Dade County. In future years, if this situation does not improve, the County should consider scrapping the current system for an elections system that will meet the County's needs and expectations. At present, the County has no viable alternative but to continue using the iVotronic with the tri-lingual bitmap ballot. In this regard, the OIG considered the option of reverting to a bi-lingual text-based system with separate iVotronic machines for English/Spanish and English/Creole. While ES&S' bi-lingual text based system has proven itself in other*

Florida counties, Miami-Dade's requirement of having voting available in three languages would necessitate two sets of voting equipment in those precincts required by County ordinance. (See Section 12-16(a) of the Code of Miami-Dade County).

It has been the OIG's position throughout its inquiry that the County must plan upcoming elections around known limitations. The added logistical requirements of dual systems may introduce a whole new set of unknown variables that the County just cannot risk. Dual systems with two sets of PEBs (English/Spanish and English/Creole) could easily add to poll worker confusion, and unless English/Creole booths are delivered countywide, the ultimate goal of having tri-lingual capability countywide would be thwarted.

Unless the County chooses to return the current equipment and procure a new system, which the OIG realizes is not economically feasible, we must learn to make do with what we have. This does not mean we should be (or are) satisfied with the current system. The OIG encourages County officials to pursue all available legal remedies to offset its dissatisfaction and unforeseen incurred costs.

- 8. Particularly in light of the transitional composition of the newly reorganized Elections Department and the replacement of senior experienced elections personnel, the OIG strongly urges the County Manager's Office and the Elections Department to proactively include former Project Manager Alvarez and his command staff in an advisory capacity for the planning, training and implementation requirements to ensure the success of future countywide elections. The OIG encourages elections officials to follow the blueprint established by Mr. Alvarez and his staff, which was the critical component in the success of the last major election. This blueprint takes into account the most basic dilemma the County faces, namely, that the iVotronic machines must be booted-up the night before.*

At present, there is no avoiding this fact of life. Hypothetically, even if the failed Version 7.5 had been certified, there would have been no guarantee that the night before set-up requirements of Version 7.4.5 would have been eliminated. And, as we all know, actual boot-up time is only one aspect of the multitude of pre-election preparations that must take place to ensure a successful election.

The OIG appreciates the cooperation and courtesies extended by Miami-Dade County personnel, State of Florida personnel, and ES&S representatives who were involved in our review of the Voting System Contract.

OIG FINAL REPORT

Miami-Dade County

OIG APPENDIX AND EXHIBITS

Miami-Dade County Voting Systems
Contract No. 326

May 20, 2003

OIG Final Report – Voting Systems Contract

Advance Notifications and Responses Received

1. Advance notification letters to Miami-Dade County Manager and Miami-Dade County Attorney.
Response received from the County Manager.
2. Advance notification letter to Mr. Aldo Tesi, President and CEO of ES&S.
Response received from ES&S, not including ES&S' package of exhibits. ES&S' full response, including its exhibits may be obtained from the Clerk of the Board (on file). ES&S' exhibit package is voluminous.
3. Advance notification letter to the Hon. Glenda Hood, Secretary of State, Florida Department of State.
Response received from the Secretary of State.

List of Exhibits

- A. Email dated May 31, 2002 regarding ballot revisions for Miami-Dade and Broward counties.
- B. Letter dated April 9, 2003, from the State Bureau of Voting Systems Certification to ES&S regarding its application for firmware version 7.5 (Release 4.3).
- C. Performance Bond Matrix
- D. Sample of seal demonstrating size of graphic files.
- E. 12-step instruction sheet Election warehouse staff for the insertion of compact flash card to the iVotronic. (Pre-deployment)
- F. Market research and price quotes for compact flash cards.
- G. Letter from ES&S regarding unavailability of Maintenance Manual.
- H. Letter from Kurt S. Browning, Pasco County Supervisor of Elections, regarding possession of a maintenance manual.
- I. Summary of Conduct & Findings, Qualification Testing of ES&S Voting Systems Release 4.3 (firmware version 7.5), which took place in Omaha, Nebraska from April 28 – May 1, 2003, prepared by the State Bureau of Voting Systems Certification, and cover letter dated May 7, 2003.

Items listed as appendices and exhibits are available at the

Clerk of the Board, Stephen P. Clark Center, 111 NW 1st Street, 17th Floor.