Meeting Minutes (Final)
Technical Guidelines Development Committee (TGDC) Meeting
March 9, 2005
National Institute of Standards and Technology
Gaithersburg, MD 20899

Members in Attendance:

Dr. Hratch Semerjian – Chair
H. Stephen Berger
Anne Caldas
Paul Craft
Hon. Donetta Davidson
James Elekes (PM-By Conference Call)
Patrick Gannon
J.R. Harding (PM-By Conference Call)
Alice Miller
Helen Purcell
Whitney Quesenbery
Ronald Rivest (By Conference Call)
Daniel Schutzer
Sharon Turner-Buie (By Conference Call)
Britain Williams

Committee Support Staff:

Craig Burkhardt, Chief Counsel for Technology, Department of Commerce
Allan Eustis, Information Technology Laboratory (ITL), NIST
Phil Greene, General Counsel Office, Department of Commerce
Mark Skall, Chief, Software Diagnostics and Conformance Testing, ITL, NIST
Barbara Guttman, Software Diagnostics and Conformance Testing, ITL, NIST
Lynne Rosenthal, Software Diagnostics and Conformance Testing, ITL, NIST
Sharon Laskowski, Information Technology Laboratory (ITL), NIST
John Wack, Information Technology Laboratory (ITL), NIST
David Cypher, Information Technology Laboratory (ITL), NIST
Nelson Hastings, Information Technology Laboratory (ITL), NIST
John Kelsey, Information Technology Laboratory (ITL), NIST
Alan Goldfine, Information Technology Laboratory (ITL), NIST
David Flater, Manufacturing Engineering Laboratory (MEL), NIST

March 9, 2005: Morning Session # 1

Dr. Hratch Semerjian, TGDC Chair, called the second plenary session of the Technical
Guidelines Development Committee to order at 8:36 a.m. He introduced himself as the
Acting Director of the National Institute of Standards and Technology and Chair of the
Technical Guidelines Development Committee.

After the pledge of allegiance, Dr. Semerjian noted that due to the weather and previous commitments, three TGDC members would join the meeting at a later time. The Chair then acknowledged the presence of U.S. Election Assistance Commissioners Ray Martinez and Paul De Gregorio who were in attendance as observers.

Dr. Semerjian recognized Mr. Craig Burkhardt as the TGDC Parliamentarian and requested that he determine if a quorum of the Committee was present. Mr. Greene called the roll (See Table 1.). Twelve TGDC members answered "present." Three TGDC members were absent at the start of the meeting. Mr. Burkhardt notified the Chair that a quorum (simple majority) of the Committee was present either in person or via conference call connection.

Dr. Semerjian then thanked the members of the Committee for arranging their busy schedules to participate in this plenary session. "As I have said in the past and it bears repeating, your willingness to volunteer significant time to the work of this Committee is a mark of the highest ideals of citizenship and civic responsibility. Every American voter will benefit from your commitment."

Dr. Semerjian entertained a motion to adopt the March 9, 2005, meeting agenda for the Technical Guidelines Development Committee located in the Committee members' binders and distributed to the public in attendance. A motion was made and seconded. Hearing no questions or discussion, the Chair requested a voice vote. The meeting agenda as published was adopted unanimously.

The Chair then entertained a motion to approve the minutes of the January 18 and 19, 2005, plenary meeting the Technical Guidelines Development Committee provided in the Committee members' binders and as public handouts. A voice vote indicated unanimity and the motion passed.

The Chair then recognized Mr. Craft. Mr. Craft expressed his extreme frustration over a recurring problem with respect to receiving the meeting materials sufficiently in advance of the meeting. He indicated that Mr. Eustis had sent him a blank CD and that he had only gotten his hands on the meeting material Monday night. Downloading the materials off the NIST web site was a frustrating experience. Some of the files were in .pdf format, which made saving them difficult. Mr. Craft noted that the Committee had passed a resolution at the last meeting requiring that NIST deliver the work materials no less than five business days in advance of a meeting. "NIST needs to work on its delivery."

Dr. Semerjian noted that NIST's intention was and is to fully comply with the resolution. "We appreciate the fact that there is a voluminous amount of material and the Committee needs to have sufficient time to review it. But we certainly have tried to meet the spirit of the resolution that was passed last time and to avoid any of these communication problems. We tried to use as many of the channels available to us for communicating the material to you. But I assure you that we'll try to do better next time."

Mr. Craft expressed appreciation for the future effort.

The Chair then noted that NIST scientists have made significant progress on technical tasks defined in the thirty-one resolutions adopted by this Committee at the January plenary meeting. "The TGDC members will have an opportunity today to provide further guidance to NIST on these tasks. In addition, two new resolutions have been submitted for consideration. Proposed Resolutions #36-05 and #37-05 as well as preliminary task reports were sent to the Committee on March 2, 2005, in accordance with the advance notice required in Resolution #1-05. In addition, this material has been posted on the public web site http://vote.nist.gov."

As a brief review for the public in attendance and viewing the web cast, the Chair explained that Public Law 107-252, the Help America Vote Act (HAVA), establishes the Technical Guidelines Development Committee. HAVA charters the members of this Committee to assist the Election Assistance Commission with the development of voluntary voting system guidelines. This Committee's initial set of recommendations for these guidelines are due to the Executive Director of the Election Assistance Commission in accordance with HAVA's nine month deadline. In the interim, the 2002 voting system standards adopted by the Federal Election Commission serve as the first set of voluntary voting system guidelines under HAVA.

At this time, Dr. Semerjian noted that the latest revised version of Robert's Rules of Order was adopted on July 9, 2004, to govern both the Technical Guidelines Development Committee and subcommittee proceedings. Dr. Semerjian called on Mr. Burkhardt, TGDC Parliamentarian, to review the logistics of this third plenary meeting of the TGDC.

Mr. Burkhardt introduced himself as Chief Counsel for Technology at the Department of Commerce. He welcomed the Committee on behalf of Secretary of Commerce Gutierrez as well as President Bush. "They are so thankful to the TGDC members for spending your very valuable volunteer time to serve on this committee."

Mr. Burkhardt reviewed the meeting strategy. "We are doing three things today. There will be a brief review of the prioritization of the work projects in response to one of your resolutions passed at the last meeting. Secondly, we will review the NIST work product. Then, finally, we will consider a couple of new resolutions toward the end of the meeting."

Mr. Burkhardt noted that the most important goal would be a review of the NIST preliminary reports that Committee members received in advance. This review and approval is necessary in order that the NIST staff can complete a final work product that the TGDC will consider for adoption in April. "Probably one key concept to keep in mind during this meeting is that we are not adopting or approving any of today's work products as part of your initial recommendations to the Election Assistance Commission. We are simply making a check on whether or not the NIST work to date follows the spirit and letter of the resolutions that you have previously adopted. You will, in any case, be able to take a look at the final NIST work during your April meeting. That will be the critical

time when you will actually take a vote to approve initial recommendations to the Election Assistance Commission."

A Committee member requested a clarification on the central point of today's meeting. "Is it primarily to give to the NIST staff Committee feedback on the work product?"

Mr. Burkhardt responded affirmatively. He explained that during this plenary session, NIST senior staff would provide brief presentations on written work product sent to the Committee in advance of the meeting. "We are calling the combination of the oral presentation and the written work product 'the preliminary report' on that particular subject. After the presentation, there will be a question and answer session, during which you will be able to engage in dialogue with the NIST staff. After that, the Committee can discuss whether or not this work product is being developed suitably or whether there are supplemental instructions or corrections that you would like to give to NIST. If there is something about the development of the work product that you do not think meets the letter of the previously adopted resolutions, I want you to bring the issue up at that time."

Mr. Burkhardt indicated the intent here to determine agreement or unanimous consent for supplemental instructions, corrections, or directions to the NIST staff. "At the end of each presentation, the Chair will read a brief statement indicating that the previous preliminary report is in response to specific adopted resolutions. He will ask for corrections, opening Committee discussion. If there are no corrections or supplemental instructions, no vote whatsoever is taken. Then NIST staff can continue along the technical line they have developed. If, however, there are supplemental instructions by consensus, those directions will be referred to as 'unanimous consent.' Finally, there may be instances where there is no unanimous opinion. Then, a vote can be taken in the normal manner where a Committee member moves a particular supplemental resolution and it can be debated."

Mr. Burkhardt cautioned members to carefully ascertain whether the NIST staff is following the directions previously provided by the Committee. He reviewed the next steps for the April plenary session where the Committee will receive two final draft work products: "One document will be the addendum to the 2002 Voluntary Voting Standards (VSS). The second document will include those requirements which are not currently embraced in the 2002 VSS addendum and are goals for more long-term standards."

Mr. Burkhardt closed his comments indicating that at the end of today's plenary session, two new resolutions will be considered by the TGDC in the normal manner.

The Chair thanked Mr. Burkhardt. "NIST scientists and I look forward to the Committee's comments and questions on the preliminary reports presented today."

Dr. Semerjian noted that Committee members had introduced themselves at the last meeting except for Colorado Secretary of State Donetta Davidson who had been unable to participate. He asked Ms. Davidson to offer a few words of introduction.

Ms. Davidson thanked the chair and expressed her honor at being appointed to the Committee. She noted that while much work has been done by the TGDC, much work remains. She asked the chair to proceed with the important agenda items that needed to be accomplished.

The Chair thanked Ms. Davidson. He agreed that as a Committee, we have an ambitious agenda today as we did at our January meeting. "Specifically, as a Committee, we will review, approve and, where appropriate, provide supplemental direction to NIST scientists. This guidance is critical to the completion of a draft of voluntary voting system guidelines that the Committee will receive for review in April. The time required to accomplish the Agenda items means that the Committee cannot take public comment at this meeting. However, there will continue to be opportunities for the public to comment on relevant issues. Comments and position statements should be sent to voting@nist.gov where they will be posted on the NIST voting web site http://vote.nist.gov. The comments we have received to date have been posted and reviewed by NIST staff and TGDC Committee members. As I mentioned in my introduction, this is the third plenary meeting of the Technical Guidelines Development Committee. At the first and second plenary sessions of the TGDC in July of 2004 and January of 2005, resolutions were adopted that have guided the Committee's and NIST's work up to this phase of the guidelines development process mandated by HAVA. From July 2004 until today, three subcommittees engaged in information gathering, research, and analysis including the taking of public testimony at a two-day hearing in September 2004. In addition, public testimony has been requested, accepted, and posted electronically at the NIST voting web site http://vote.nist.gov. The work product of the subcommittees was presented at the January 2005 meeting as a series of resolutions. The resolutions were debated and in many cases amended. Adopted resolutions formed the basis for the Document Drafting phase of the Guidelines Development Process. The resolutions assigned NIST specific technical tasks. NIST scientists are here today to report back to the Committee on their progress."

Dr. Semerjian recognized the arrival of Mr. Berger to the meeting who had been delayed by the weather. The Chair then called on Mr. Mark Skall of NIST's Information Technology Laboratory to review a prioritization of the Committee's adopted resolutions and a proposed strategy for implementing them.

Mr. Skall thanked the Chair. He noted the tremendous work of the TGDC in passing 31 resolutions at the January meeting. Mr. Skall's presentation made the following major points:

- NIST staff initially prioritized resolutions to focus on the most important tasks first.

- Building on the work of the 2002 VSS, the eventual goal is to produce the best standard possible - one that is testable and precise.

- – The future (long-term) standard will be organized differently from the 2002 VSS.

- – A significant initial goal is to help the states get through the 2006 election. To that end, NIST will offer guidance on gaps in the 2002 VSS in areas such as security, wireless technology, and human factors in voting systems.

- – The NIST proposed approach in the short term will be to fill in the gaps in the 2002 VSS and correct errors. At the same time, NIST will develop a draft of the long-term redesigned standard.

- – The highest-priority resolutions and resolution tasks are addressed in the April 2005 work product as an addendum to the 2002 VSS. These are the tasks that impact the 2006 election cycle and focus on improving the 2002 VSS by filling in the gaps, correcting errors, and also addressing critical issues facing the state such as ensuring that installed voting software is the same as the software that has been tested.

- – In addition to the April 2005 addendum that will likely take the form of in-line changes to the 2002 VSS, a draft of the new redesigned voting system standard will be developed in parallel. The plan is to complete a redesigned standard in November 2005.

(Mr. Skall's written report and presentation slides are available on the web at: http://vote.nist.gov/MeetingMaterials.html)

Mr. Craft raised concerns on the recurring issue of keeping election administration requirements for voting officials out of the voting system standards. He thought that the consensus of the Committee was that election administration was a separate body of work that vests mainly in state elections codes unless Congress chooses to override the states' authority. Mr. Craft noted the development of a best practices work product by the Election Assistance Commission. It is his belief that election administration issues have no place in voting system standards.

Ms. Quesenbery disagreed. She noted the difference between the administration of an election and requirements for the deployment of a voting machine to effectively meet the standards. She noted that you could build a perfectly accessible machine but if you place it a foot from the wall, you have essentially rendered the accessibility requirements ineffective in their entirety. It was her understanding that what we are talking about is not how to run an election but how to deploy a voting machine in the service of an election.

Mr. Craft responded on his interpretation of the Committee's consensus. He agreed that how you use the voting machine is very important. How the machine is properly used is one of the things that you put within the system boundary of the requirements within the operators manual. "Of course, if you are not following the manufacturer's procedures as

far as they were included in the certification process, then you are not using the certified system."

Mr. Skall noted that the Committee resolutions talk about implementing requirements well beyond the capabilities provided by the voting system and the operator's manual. "You need to know as a voting official how to set up a voter verified paper audit trail to ensure privacy and all of the other requirements. Wireless has similar issues. You can have a capability for wireless communication but you have to know when to turn it on and when to use it. How do we follow the resolutions if we do not provide guidance? How that guidance is provided is, in my mind, completely up to the TGDC. It could be 'not mandatory' or it could be 'best practices.' "

Mr. Craft pointed out that the guidance needs to flow into the documentation requirements for the system, and that needs to be part of the evaluation system.

Ms. Quesenbery elaborated on her mobility example. "The system documentation shall provide proper layout and shall meet that requirement. If you would like to say it comes out of the documentation, that's fine. But I believe if we set up a list of requirements for the design and manufacturing of voting systems, then this would be one of them."

Dr. Williams noted a precedent here. "Optical scan voting system vendors may specify in their documentation that you use a certain pen to mark the ballots. Usually it is a pen that they sell. Fifty percent of the people who use that system use a number-two pencil to mark their ballots. I definitely think the vendor should specify how the system is to be used. If a jurisdiction chooses not to use it that way, then that is their choice. But they have to realize they are not running a certified system. One of the real problems we have right now is that the voting system standards are so convoluted and difficult to read that your typical local election official cannot read them. They do not know what they are supposed to be doing. So your suggestion of putting guidance in a separate document is an excellent suggestion."

The Chair thanked Mr. Skall. He stated that NIST believes the preceding preliminary technical report on the Prioritization of Adopted Resolutions from the January 2005 meeting and the proposed prioritization of work product responds to all currently adopted Resolutions by the Committee. "Unless there are supplemental directions or corrections, the technical report and related work product will continue to be developed consistent with this Preliminary Report. Are there any questions, further directions, or corrections?"

Mr. Craft offered a compromise to address Ms. Quesenbery's issue. He noted his concern with the wording of Mr. Skall's slides. "Both standards will have requirements for voting officials. I think perhaps requirements for proper use of the system as certified or as developed would be a little clearer to the intent."

Mr. Skall agreed to revise the language. He noted that in the conformance clause, we need to identify the entities that conform.

At this time, the Chair called on Dr. Laskowski to present a preliminary report on the NIST Approach to Usability and Accessibility Requirements for the Augmented 2002 VSS.

Dr. Laskowski thanked the Chair. Dr. Laskowski made the following points in her presentation:

- In the April augmented VSS, accessibility and usability corrections and additions will be small. We are collecting actual and sample ballots from across the nation to analyze so we determine a good test set suitable for qualification testing.

- In the November 2005 redesigned VSS, there will be a reorganization and also performance-based human factors requirements.

- The augmented VSS in April will focus on voting equipment standards but will also contain guidance on setting up equipment properly.

- Under HAVA, accessibility includes Native Americans, Alaskan Native citizens, and voters with limited English proficiency. They are included under the scope of accessibility within these standards.

- There is a large body of literature for reference with respect to standards for accessibility (the Americans with Disabilities Act Accessibility Guidelines (ADAAG, HAVA, section 508 ADA, 2002VSS, etc.)

- With respect to usability, there are some references in the IEEE P 1583 standards draft, appendix C of the VSS as well as useful guidebooks from the Federal Elections Commission. Thus we will provide a 2002 VSS gap analysis in the April standards document.

- We will be creating a test methodology for usability testing to be used by voting systems testing laboratories.

- Accessibility, usability, and privacy are a three-legged stool. If you break one of the legs, the stool falls over. So with respect to accessibility of a paper audit trail for voter verifiability, you need to provide a generally accepted accessible way to do that for people with disabilities.

- For November 2005, we expect to redesign usability and accessibility requirements including an initial usability performance benchmark and a test protocol. In addition, the November 2005 standard will contain some revised universal polling place guidelines.

(Dr. Laskowski's written report and presentation slides are available on the web at: http://vote.nist.gov/MeetingMaterials.html)

A committee member pointed out that you might want to review state laws defining ballot design as well as collect ballots.

Ms. Quesenbery asked Dr. Laskowski whether she had received any feedback from the election community.

Dr. Laskowski indicated that she had been in close consultation with the U.S. Access Board. They have provided commentary on the work done to date. In addition, there have been public comments, and each will be addressed to incorporate the concerns in general into the accessibility documents.

The Chair thanked Dr. Laskowski. He stated "NIST believes the preceding preliminary technical report titled: NIST Approach to Usability and Accessibility Requirements for the Augmented 2002 VSS responds to TGDC Resolutions 2-05, 3-05, 4-05, 5-05, 6-05, 8-05, 9-05, 10-05, and 11-05. Unless there are supplemental directions or corrections, the technical report and related work product will continue to be developed consistent with this Preliminary Report. Are there any questions, further directions, or corrections?"

There being no further questions, directions, or corrections, the Chair called on Mr. John Wack of NIST's Information Technology Laboratory to present: The NIST Approach to Verified Voter Paper Audit Trail (VVPAT) Requirements for the Augmented 2002 VSS.

Mr. Wack thanked the Chair. Mr. Wack made the following points in his presentation:

- NIST is proposing VVPAT requirements, but welcomes comments, suggestions, and input from the TGDC.

- The requirements pertain to the 2002 VSS addendum. We are addressing VRE systems that produce a printed summary of the voter's choices. The voters can then compare the paper printout with the electronic record. If the voter is satisfied, he/she can then do something that causes the electronic record to be recorded, and that is the record that is counted. The paper record is used for audits and recounts.

- We reviewed the literature on the VVPAT issue and talked with many members of the election community. We also reviewed relevant state legislation on the issue. Five states have enacted VVPAT legislation and twenty-three other states are considering legislation.

- A VVPAT system has to be both secure and usable. Usability, accessibility, and robustness of the technology are the key issues.

- If a poll site generally has a line of voters, VVPAT may increase the waiting time of voters because it takes more time to verify and cast your vote.

- NIST can offer some guidance by specifying the core fundamental issues, requirements, and best practices that the states really need to look at to make sure they are doing this correctly.

- Proper procedures are needed to handle the paper. A VVPAT capability should not just reintroduce paper problems.

- NIST has determined eight core requirements and a number of derived requirements for each of those eight. The eight core requirements are:

  o The DRE-VVPAT shall show the voter a paper record of the voter's electronic ballot choices, which constitutes a distinct record of the voter's ballot choices.
  o The DRE-VVPAT shall permit the voter to compare the paper and electronic records with maximum ease according to established accessibility and usability guidelines.
  o The method for voter verification shall be accessible to all voters.
  o The DRE-VVPAT shall permit the voter to accept or reject the paper record and reenter ballot choices at the DRE-VVPAT.
  o The voter's privacy and anonymity shall be preserved during the process of recording, verifying, and auditing ballot choices.
  o The DRE-VVPAT shall permit robust auditing, forensics analysis, and full recount capability of its electronic and paper records.
  o The DRE-VVPAT equipment shall be secure and resistant to failures, and shall be usable in its administration.
  o Trained personnel, procedures, and consumables shall be in place during elections to handle all aspects of VVPAT capability.

(Mr. Wack's written report and presentation slides are available on the web at: http://vote.nist.gov/MeetingMaterials.html)

Dr. Schutzer requested some clarification. "I am a little confused about what VVPAT really provides. Let me make sure I understand the process. I am a voter. I see my vote on the screen. I look down and I see on a piece of paper at a glance. I see they match, I am happy. I walk away. But is it not likely that after the vote leaves the screen and it gets put into the database, then what I see is not necessarily going to match? So to me, this is a lot of effort, and it does not really solve the problem."

Mr. Wack pointed out that establishing some traceability between individual records certainly allows someone to determine whether paper ballots have been inserted or whether they have been removed.

Mr. Craft commented on the scope of TGDC work on the VVPAT issue. "The EAC has an interest in providing standards for those states who now have mandated this technology. So with respect to the issues of how you spoil ballots; what you do with a spoiled ballot, what you do when you reach a conflict; and how you are going to run a

forensic analysis: here you are going to have to ultimately look to state law. Those states that have required VVPAT and haven't addressed the issues will find themselves addressing them either in statute or in the election contest activity. I was interested in the use of the word 'auditing.' I agree with the definition in the glossary. I just wanted to make sure in your analysis we're being consistent with that definition. It is very different from the use of the word auditing with reference to recounts."

Mr. Wack stated that he was referring to the correctness of the electronic record, via auditing with the paper records. He was referring to the usual 1 percent manual recount or auditing that we generally see in state law.

Mr. Craft indicated that what we are then talking about is a discovery recount. Some states have this requirement and others do not. You have to refer back to the state law because these are the people affected by such a requirement.

Mr. Wack noted that NIST is not in a position to say what auditing a state ought to do. "What I try to do is at least make the records more accurate and more traceable and in a sense give election officials tools. If they choose to use them, we assert that that the tools will result in better accuracy."

Mr. Skall backed up Mr. Wack's statements regarding NIST's intent. "We are not advocating any of the particular uses or technologies. The point here is if a state decides to do certain things, we want to make sure that the standards and therefore the tools exist. So this is strictly an 'if' requirement. All of the statements have to start with the 'if' statement."

Mr. Craft emphasized the sensitivity of state election officials to the misuse of the word 'audit.' "Interested parties have complained that states have no audit process, when, in fact, the states have very good internal controls. They have a very good documentation process. They have separation of functions, and they have election data that you can audit. But those are election administrative controls more so than audit. And I think the definition here in the proposed glossary speaks to that. We need to be consistent."

Mr. Wack indicated that he wanted to make sure that we are using common language.

Secretary Davidson expressed a concern of many election officials with respect to voters and paper receipts especially if the voter walks out with that receipt and it does not match. "Then whether you call it auditing or recount, we are in trouble. So I want to make sure we are not favoring one form of verification or another and leave that up to the state law."

A discussion continued on the advantages and disadvantages of cut paper ballots versus continuous paper rolls.

Mr. Williams indicated that there is value to be able to say to a state if you do verification this way, here are some requirements. " So if you have chosen a paper roll, then you must

have surrounding administrative procedures. We are not providing a single solution but are providing the requirement in all of the appropriate permutations of solutions. I think that one of the things that we will do indirectly is provide guidance on how difficult it is to administer, design, prepare, qualify, or certify both privacy and security of a particular voting system. I think that would be a helpful kind of indirect analysis to help state officials make good decisions."

Dr. Rivest offered the possibility that the way voters signing in to vote could be randomized in such a way as to ensure that someone could not determine the order in which they voted.

Ms. Miller indicated that this would not work in her jurisdiction, which has just one DRE per precinct.

Dr. Rivest addressed the disability issue with a paper standard offering the possibility of a vote record feeding into another special machine that could render it into any particular media. "It's the same paper now being scanned or read in. It's also an audio voice from the machine."

Mr. Wack brought up the possible use of bar coding technology. "One of the things that we proposed in the requirement actually is the possibility of a paper ballot with both a human readable part and an encoded part. The encoded part could be basically an encoded representation of the human readable content. That way you could hide some information such as unique identifiers. This would have to be an open format. Basically, the major shippers use a similar source of encoding formats to scan information. With voting, it requires some auditing to make sure the two formats work."

Secretary Davidson cautioned against the use of bar code. "I think that there is only so much that you can do with bar code. You have to be very careful not to put numbers on the paper because the public will infer that we can identify how they voted. This is a very contentious issue. So a bar code should not ever identify how someone votes. We do not want to ever be able to identify that with a bar code or with numbers. We have to make sure that the public understands the bar code is only for auditing and not tracking how the voter voted. It is very important. So then the requirement has to be written with very common wording so the public understands."

Dr. Williams offered several points here. "One is on this issue of putting information in bar codes. I have to point out that the voter cannot verify the bar code, so you do not have a voter-verified ballot anymore if you use that bar code to count those paper ballots. You are not counting what the voter verified: just a technical point."

"The other thing I am happy to hear you mention is that you are at least considering letting the voter handle the ballot. This concept of a ballot under glass came out of a graduate student's thesis a number of years ago. Somehow or another it became a de facto standard. From the day Australian ballots were introduced into this country, voters have

handled their ballot. One of the criticisms I have heard is the fact that this paper is under glass, and the voter cannot hold it in their hand and look at it."

"The third thing that's a nagging problem for me is the lack of discussion of the impact that all of these innovations are going to have on the voter. We know a little about voter behavior. We know most people who vote are in a hurry. If you start putting impediments in the voting place, regardless of what that impediment is, you are going to have a drop off in your participation. So we do not want to create an unintended consequence here where we have an enormously secure system that people stay away from in droves."

The Committee discussed the issue of which vote takes precedence- the paper or the electronic vote. It was noted that this varies by state statute. Members of the Committee pointed out that the more information we can draw on the way the voting records were created and stored, the better off you will be in a disputed election. A recount is done with one or the other record but not both.

Dr. Williams raised a point of voter confidence. "The whole underlying concept here is to establish voter confidence. When we are in the back room verifying that this bar code corresponds to this printed record, the voter is not participating in this process and thus the process did nothing to increase his confidence."

A final question was raised concerning retrofitting voting equipment when states require paper verification. Mr. Wack indicated that we had not addressed this issue specifically at this time.

Dr. Williams indicated that the present standards cover retrofitting because the present standards say any change of the voting system requires requalification and recertification.

Committee members felt that retrofitting needed to be addressed in the requirements in terms of guidance to the states.

The Chair concluded, "NIST believes the preceding preliminary technical report titled: NIST Approach to VVPAT Requirements for the Augmented 2002 VSS responds to TGDC Resolution 12-05. Unless there are supplemental directions or corrections, the technical report and related work product will continue to be developed consistent with this Preliminary Report. Are there any questions, further directions, or corrections?"

The Committee asked that NIST address guidance on retrofitting in the requirements.

The Chair adjourned the meeting for a thirty-minute break.

March 9, 2005: Morning Session # 2

The Chair called on Mr. David Cypher of NIST's Information Technology Laboratory to present a preliminary report on NIST's Approach to Wireless Requirements for the Augmented 2002 VSS.

Mr. Cypher quoted from the executive summary to his preliminary report:

"Based on Resolution #35-05 (Title: Wireless), NIST is directed to research and draft standards documents for the use of wireless communications devices in voting systems. Since a blanket statement about wireless communications devices in voting systems is neither prudent nor appropriate given the wide variety of wireless communications devices and possible usage in the numerous and diverse voting systems, the approach to considering wireless communications devices in voting systems will be on a case-by-case basis. To this end, NIST will create a guide showing where wireless communications may potentially be placed in a particular voting system and some of the associated security risks.

This guide will contrast the hype for wireless technology usage versus the real needs and/or requirements for wireless technology to improve the performance or operation of a voting system. The placements described are not to be construed as suggesting that wireless technologies should be used in these locations, nor is the list exhaustive of all current or future usage of wireless technologies placements. Nor does it replace those preexisting wireless requirements currently stated in the VSS2002 or IEEE P1583 /D5.3.1.

Just as a purely mechanical voting system can be modernized to use a purely computer automated voting system, so too can that system be modernized to include wireless technologies. Therefore, it is not a question of will wireless technologies be used, but rather a matter of time until wireless technologies are used. The answer to this question has already been answered because wireless capabilities are present in some voting systems today. A better question to ask is, Should it be used and, if so, under what circumstances? Again the answer to this question is very clear. Any wireless technologies should be used when it improves the performance or operation of the voting system without introducing any other problems or issues (e.g., security). Thus if requirements are written which can only be satisfied by wireless communicating devices, then they should be used. Otherwise they should not be used just because they can be. An exhaustive investigation of all possible wireless technologies or, more importantly, all implementations of wireless technologies will never be practical. Therefore, specific wireless technologies will only be used as examples."

Mr. Cypher then gave a brief overview of each section of his preliminary report. He showed a diagram depicting each place where wireless might be used within the context of the 2002 VSS.

Mr. Cypher made the following points with respect to the diagram.

> – As part of wireless usage and securing wireless usage, you need to know what is being transmitted and what you need to secure.

- Even with a requirement that a system has to have a password, how do you ensure that the password is used by the user?

- There are seven different physical layers that use wireless technology, infrared, or radio frequencies.

- Blue tooth technology itself is an entire seven-layer stack protocol. It does not follow the IEEE structure for putting layers above it. It's a completely defined, self-contained package.

- Encryption is a requirement for all wireless transmission.

(Mr. Cypher's written report and presentation slides are available on the web at: http://vote.nist.gov/MeetingMaterials.html)

Mr. Craft asked if determining the allowable data to be transmitted would be helpful. "One of many options is actually evaluating what pieces of information or what level of risk you could take within wireless systems." He noted further that Mr. Cypher had indicated that it would be virtually impossible to bring a measurable standard to every case of wireless use.

Mr. Berger asked if there was reliable information from the industry on what data is actually transmitted in Mr. Cypher's model. "I was wondering, in keeping with the Election Assistance Commission's interest in voting technology nationwide, perhaps we could get some cooperation from the industry in disclosing what data they are transmitting."

Mr. Cypher indicated that this was a good suggestion.

Dr. Williams pointed out that we have a resolution that states that use of wireless is inherently risky. "Manufacturer better be prepared to justify use of it very carefully and show that there is not any risk that goes along with using it."

Mr. Berger made the point that wireless transmission is always present over every connection (wired or wireless) where there are electrons flowing. "When an electric current is flowing, there is a wireless emanation. It's just a matter of degree at that point. If all these wireless connections are wired, all you've done is change the degree to which someone can monitor what's going on."

Dr. Williams indicated that much of the wireless discussion is too theoretical in the short term. "We need to look at how voting systems are using wireless technology. And right now the primary use of wireless technology in a voting system is to program voting stations. Because if I have got 3,000 voting stations and I have to load those with pc cards, then I have got to sit down and manufacture 3,000 pc cards, and keep them separated by precinct. Whereas if I could sit in my warehouse and load those ballot images wirelessly, there is a tremendous advantage. We need to address that. What are

the dangers there? The second thing is opening and closing the polls. Again, I am in the precinct, and it is time to open the polls. I have got anywhere from 10 to 30 voting stations sitting there. It is very convenient to be able to sit down with a console and wirelessly open all 30 of those voting stations; it's the same thing with closing the poll at the end of the day. During the day, that wireless capability is not a threat. You turn it off. Voting officials want to know what the risks are if they use wireless. And if they choose to use it, what safeguards can they reasonably put into place?"

Dr. Williams summarized what he believed to be the sense of the TGDC Committee's guidance to Mr. Cypher. "You don't need to address all of the possible permutations, but rather the first order specific applications."

Dr. Williams also indicated that he would be happy to put Mr. Cypher in contact with some of the vendors that have wireless systems where he can go look at the systems and get comfortable with how they should be operating.

Dr. Semerjian commented on the constructive nature of these comments. "I don't really consider this guidance as a change in our direction. I think I consider these recommendations as focusing on a more limited set of work products and outputs."

In conclusion, Dr. Semerjian requested unanimous consent on this issue. "NIST believes the preceding technical preliminary report titled: NIST Approach to Wireless Requirements for the Augmented 2002 VSS responds to TGDC Resolution 35-05. Unless there are supplemental directions or corrections, the technical report and related work product will continue to be developed consistent with this Preliminary Report. Are there any questions, further directions, or corrections?"

There were no questions or directions. The Chair called on Nelson Hastings of NIST's Information Technology Laboratory to present a preliminary report on NIST's Approach to Software Distribution and Set Up Validation for the Augmented 2002 VSS.

Mr. Hastings made the following points during his presentation:

- The goal for software distribution is to ensure that the software has been distributed without modification.

- The approach is to develop reference information that can be used to check that the software has not been modified.

- This information comparison can take the form of comparing a hash value that is generated from the voting system with the software being inspected. That type of technology is being used in the National Software Reference Library at NIST in their work with law enforcement.

- Sample draft recommendations for software distribution included:

- o The ITA shall witness the final build of the executable version of the qualified voting system performed by the vendor.
- o Complete binary images of voting system software including installation programs shall be distributed on a "write once" by authoritative sources (vendors, ITAs/VSTL, and jurisdictions).
- o The "write once" media containing binary images and hash values of the voting system software shall be labeled by authoritative sources (vendors, ITAs/VSTLs, NSRL, and jurisdictions) so that is uniquely identifiable (including the authoritative source and date created).
- o The authoritative sources (vendors, ITAs/VSTLs, NSRL, and jurisdictions) that generate hash value and digital signature reference information shall use a FIPS-approved hash function.
- o The authoritative sources (vendors, ITAs/VSTLs, NSRL, and jurisdictions) that generate digital signature reference information shall use a FIPS-approved digital signature scheme.
- o Hash values and digital signatures used for reference information shall be generated by authoritative sources (vendors, ITAs/VSTLs, NSRL, and jurisdictions) using a FIPS 140-2 level 1 validated cryptographic module.

- – Sample draft recommendations for set up validation included:

- o The vendors shall identify and document all voting system software required to be installed on voting system for proper operation including the software jurisdictions are required to modify to conduct a specific election.
- o Jurisdictions shall obtain reference information (binary images, hash values, digital signatures) for the software listed by the vendors from an authoritative source.
- o Jurisdictions shall verify that all software on the voting system has not been modified using the reference information.
- o The vendors shall document the values for all the static registers and variables, and initial starting values of all dynamic registers and variables listed for voting system software except for the values set by jurisdictions.
- o Jurisdictions shall document the values for all the static registers and variables, and initial starting values of all dynamic registers and variables listed for voting system software it customizes for an election.
- o Jurisdictions shall verify that all the static registers and variables, and initial starting values of all dynamic registers and variables are consistent with the documented values provided by the vendors and jurisdictions.

(Mr. Hasting's written report and presentation slides are available on the web at: http://vote.nist.gov/MeetingMaterials.html)

There being no questions from the TGDC, the Chair stated that, "NIST believes the preceding technical preliminary report titled: NIST Approach to Software Distribution and Set Up Validation for the Augmented 2002 VSS responds to TGDC Resolutions 15-

05 and 16-05. Unless there are supplemental directions or corrections, the technical report and related work product will continue to be developed consistent with this Preliminary Report. Are there any questions, further directions, or corrections?"

Hearing no comment, Dr. Semerjian called on Lynne Rosenthal of NIST's Information Technology Laboratory to present a preliminary report on an Interim Conformance Clause and Glossary for the Augmented 2002 VSS.

Ms. Rosenthal made the following points in her presentation:

- Resolution # 24-05 instructs NIST to draft a conformance clause.

- There will be a conformance clause for the Augmented VSS as well as the redesigned VSS.

- A Conformance Clause:
    o States at a high level, what is required in order to conform and to whom the standard applies
    o Defines what conformance to the standards means
    o Specifies how testable requirements are expressed
    o Defines any conditions, constraints, partitioning of the technology, etc., that may be applicable.

- With respect to the interim conformance clause scope, the minimal requirements include functional, performance, document, test evaluation, and procedural requirements.
- With respect to the interim conformance clause applicability, the requirements apply to:
    o Designers and manufactures of voting systems
    o Testing entities who do qualification testing
    o Voting officials, including those responsible for the installation, set up, operation, and maintenance of voting machines.

(Ms. Rosenthal's written report and presentation slides are available on the web at: http://vote.nist.gov/MeetingMaterials.html)

A Committee member asked if there is a level of criteria when you are referencing a specific standard from another organization indicating that they have achieved a certain level of specificity in how they define conformance. Is that part of this requirement for any reference standard?

Ms. Rosenthal indicated that this would be something we need to consider, but that the current VSS does not have a conformance clause or a specific level of criteria.

Another Committee member asked for clarification of the conformance clause with respect to security requirements. Does the conformance clause address issues such as a

situation where a security vulnerability is discovered in the software after the system is qualified?

Ms. Rosenthal replied that typically the conformance clause does not address what happens after a system has been tested or a new problem has arisen. It is used to just identify what the requirements are that apply and at what level they apply.

Ms. Rosenthal went on to describe the update to the 2002 VSS glossary required in resolution # 33-05. The glossary includes definitions in the VSS and, in addition, terms needed to understand voting, security, human factors, and testing.

We collected terms from a variety of sources including HAVA, the IEEE P1583 project, state standards, and ISO, as well as the 2002 VSS.

Each term includes, along with a definition, a source, association and a reference to related terms.

The definitions will be revised and new terms added as needed. The glossary will be web accessible.

Committee members had questions concerning definitions for procedural terms and specific terms such as 'data element.'

Ms. Rosenthal responded that if there is a term that needs to be defined in order to relay an understanding related to voting or related to the testing of these standards, then we put the term in the new glossary. A general term that needs to be understood in the election community would be included as well. Probably a term like "data field" would not be included.

The Chair stated that, "NIST believes the preceding preliminary technical report titled: NIST Approach to Direct and Indirect Verification for the Redesigned VSS responds to TGDC Resolutions 12-05 and 21-05. Unless there are supplemental directions or corrections, the technical report and related work product will continue to be developed consistent with this Preliminary Report. Are there any questions, further directions, or corrections?"

There were no further questions, and the chair adjourned the meeting for lunch.

March 9, 2005: Afternoon Session # 1

The Chair called the meeting to order. He noted that with eleven members present, the meeting had a quorum. He requested John Kelsey of NIST's Information Technology Laboratory to present a preliminary report on NIST's Approach to Direct and Indirect Verification for the Redesigned VSS.

Mr. Kelsey made the following points in his presentation:

- You do not actually need paper to secure a voting system.

- In the interaction between the voter and the voting system, errors and fraud are hard to catch. The privacy requirement imposes limits on auditing.

- HAVA requires that the voter have the opportunity to verify his/her own choices.

- A security framework for dual verification systems produces two or more records of independent validity. This type of verification system should apply to all electronic voting systems in future standards.

- Direct verification means that the voter verifies his/her choices directly such as with paper. Indirect verification means that the voter verifies his/her choices with the computer.

- With multiple representations, neither record can always dominate in disputes. The records must be kept under separate control.

- Under this broad security framework proposal, new voting systems would be required to produce dual verification.

(Mr. Kelsey's written report and presentation slides are available on the web at: http://vote.nist.gov/MeetingMaterials.html)

TGDC members asked for clarification on the verification techniques. There was some skepticism on the value of multiple representations.

Dr. Williams noted that the potential attacks presented by Mr. Kelsey to date have never been accomplished on a voting system.

Dr. Semerjian stated that we need to make sure that whatever standards are written in this security area require that the machines be usable by the election officials in ways that do not compromise security. This will be a requirement for software set up and validation as well.

Dr. Williams pointed out that this dual verification system requires more careful thought especially with respect to the voter reaction to such a system. "If we are not careful, we can have an unintended consequence here of designing a system that the voters just despise and would result in a drop off of voter participation. I like your concept but I think it's a long, long way from any reasonable implementation."

Dr. Rivest noted that one of the things this committee is hearing consistently from the experts in the field is that the complexity of the voting system is making it much easier to

have such an undetected attack.

Secretary Davidson raised the cost issue for states. "I think that we are dealing with voluntary standards and if we make them so cost prohibitive, the states will not accept them. Yet I definitely believe that states should be accepting them. Be careful what we ask for, or we won't get anybody that implements the security standards."

Dr. Williams cautioned that you need to accomplish research in these areas before we accept the assumptions. "You made a statement that misaligned optical scan ballots can create more read errors for one candidate than the other. My experience is no, basically when those machines get misalignment problems, they reject the ballot but they do not create read errors, and that is based on thousands of hours on testing those devices."

The Chair noted that NIST believes the preceding preliminary technical report titled: NIST Approach to Direct and Indirect Verification for the Redesigned VSS responds to TGDC Resolutions 12-05 and 21-05. Unless there are supplemental directions or corrections, the technical report and related work product will continue to be developed consistent with this Preliminary Report. Are there any questions, further directions, or corrections?

Dr. Williams reiterated his caution that "the best practice here requires an analysis of cost as well as a real analysis of risk rather than relying on an anecdotal theories of risks, and then moving forward to look at real-world solutions that can be implemented and tested that address those risks that are real. This is good science, and it is what NIST is supposed to do."

The Chair noted this good advice. He then called on Mr. Kelsey to present the preliminary technical report on NIST's Approach to Security Testing for the Redesigned VSS.

Mr. Kelsey made the following points in his presentation:

- Resolution # 17-05 directs NIST to research and draft standards documents requiring testing of voting systems that includes a significant amount of open-ended research for vulnerabilities.

- We cannot rely solely on procedural checklists.

- An open-ended evaluation needs to be adversarial. The goal is to find weaknesses before the system is fielded. We need to try to find a way to fail the system.

- We cannot trust vendor assertions without verification. Vendor insiders may be in on an attack.

- We have to assume the possibility of the existence of serious attackers.

- New requirements are needed on voting system documentation.

- We need to verify claims in voting system documentation and do an open-ended search for problems.

Cost is a significant issue in this type of evaluation.

(Mr. Kelsey's written report and presentation slides are available on the web at: http://vote.nist.gov/MeetingMaterials.html)

The Chair stated, "NIST believes the preceding preliminary technical report titled: NIST's Approach to Security Testing for the Redesigned VSS responds to TGDC Resolution 17-05. Unless there are supplemental directions or corrections, the technical report and related work product will continue to be developed consistent with this Preliminary Report. Are there any questions, further directions, or corrections?"

Mr. Craft commented that he liked much of the preliminary report. "This is very similar to the analysis in the Florida testing program, and I think, as well, Dr. William's program in Georgia in many areas. There was some intermingling between concepts that are applicable to certifying a voting system for deployment and actually certifying an installed site. The voting systems standards really have to concentrate on those measurable standards. I think you need to sort out a little bit of that. Additionally for the purposes of accrediting labs, we are going to have to put a definition around 'open ended' and we are going to have to define 'due diligence' with respect to a search for extraordinary anomalies that you have not previously encountered. We cannot really leave that undefined in the standards."

Mr. Kelsey agreed.

The Chair adjourned the meeting for a twenty-minute break.

March 9, 2005: Afternoon Session # 2

The Chair called on Dr. Alan Goldfine of NIST's Information Technology Laboratory to present a preliminary report and discussion of NIST's Analysis of the 2002 VSS for the Redesigned VSS.

Dr. Goldfine covered the following points in his presentation:

- The complete first draft of the table extracting requirements from the 2002 VSS proposes disposition of each requirement.

- We will incorporate comments received and answers to questions.

- An election process model serves as a reference for organizing and cross-referencing compliance points.

- We continue ongoing work to extract and identify precise, testable compliance points, clarify, remove redundancy, and organize requirements coherently.

  - The Proposed rewrite of 2002 VSS sections on software standards:

    o Recommends changes to coding conventions for voting system source code
    o Retains and expands conventions addressing software integrity
    o Retains size limit on modules (needed for logic verification)
    o Purges outdated, optional stylistic conventions
    o Defines criteria for "published, credible coding conventions" to encourage adoption of current best practices
    o Requires structured exception handling.

(Dr. Goldfine's written report and presentation slides are available on the web at: http://vote.nist.gov/MeetingMaterials.html)

The Chair stated that, "NIST believes the preceding preliminary technical report titled: NIST's Analysis of the 2002 VSS for the Redesigned VSS responds to TGDC Resolutions 25-05, 27-05, and 29-05. Unless there are supplemental directions or corrections, the technical report and related work product will continue to be developed consistent with this Preliminary Report. Are there any questions, further directions, or corrections?"

There were no questions or comments.

At this time, Mr. Elekes and Dr. Harding joined the meeting via teleconference.

The Chair then moved to consider two new resolutions from TGDC members. He called on Ms. Caldas to introduce her resolution.

Ms. Caldas thanked the Chair. She indicated that she would read the resolution, which has one phrase, deleted from the version sent out in advance of the meeting.

"Resolution #36-05 Offered by Ms. Caldas (As Edited)

Title: Consensus Standards

The TGDC recognizes the time frames established in HAVA as necessary to ensure a prompt response to the nation's voting system issues, which it was written to address. The TGDC further recognizes that a robust voluntary consensus standards system exists in

this country and should be relied on, to the greatest extent possible, to facilitate the long-term development and regular maintenance of voluntary voting system guidelines and standards.

Moreover, the TGDC encourages the EAC to rely not only on NIST's recognized expertise, but also on the U.S. voluntary consensus standards and conformity assessment systems, as exemplified by programs and standards which comply with the requirements set forth in OMB Circular A119, as part of the EAC's long-term systemic approach to addressing the nation's continuing need for up-to-date, voluntary voting system guidelines and standards."

Ms. Caldas indicated that she deleted the reference to "accredited by the American National Standards Institute and others" from the original resolution version because people misinterpreted its intent. She also noted the addition of "and standards" after the word "program."

Ms. Caldas explained, "The resolution is proposed to ensure that the long-term process by which voting standards are developed, referenced, and updated relies as much as possible not only on NIST, which has been doing an outstanding job but also on the voluntary consensus standards and conforming assessment systems already in place in this country."

The motion was seconded for discussion.

Ms. Quesenbery questioned the intent of the resolution. "It seems to me that we have been doing this all along. So I am a little curious about the need for this resolution, as well as relying on existing federal regular regulations, for instance, in the human factors area. Here, we are relying rather heavily on section 508 in the federal regulations. And given this resolution, it might suggest that we should be relying more heavily on a voluntary consensus standard over that federal regulation."

Ms. Caldas referred to OMB Circular A-119. "It lists the criteria for standards that are in the public interest for openness, balance, and consensus, but it also recognizes that where it is not practical to rely on them, that you would rely on whatever works, essentially."

Several TGDC members asked if the resolution pertained to short-term standards or whether it was meant to apply to future longer-term standards efforts. Ms. Caldas indicated that the resolution was intended to pertain to the long term, but also to raise awareness that, for the long term, there is a process that exists that is in the public interest.

Mr. Berger spoke in favor of the resolution. "I think at its heart, it calls for a two-stage system: one in the voluntary consensus arena, where the door is open and the public can join committees as fully participating members. I think that is important, especially in this arena. And then the work product can be taken in and considered in a process such as the TGDC's in order to determine its appropriateness."

Ms. Quesenbery indicated this was sort of part of the confusion she had because she thought that this committee and the NIST team already utilized the IEEE P1583 draft standards and other standards or relevant information available.

Ms. Caldas indicated that her resolution was not meant to imply that the standards implementation would be completely under a voluntary consensus process.

Dr. Harding asked for clarification of the amendment. "If I understand correctly, we are moving forward on a two-step process of first being able to get through the 2006 election, and then indicate to the public-at-large that the standard is going to be much higher in terms of issues such as accessibility. That would be the baseline for expectations for all future national elections. Is that correct?"

Mr. Craft agreed with Dr. Harding's interpretation and elaborated. "In partial response to you, and I am supporting the resolution, I think what this resolution does is to point out that this is a long-term ongoing process that will not end in 2006 or 2008 or hopefully ever. I mean, as technology continues to evolve and as we learn more in the areas of accessibility, usability, and security, this work needs to be updated at least every other year."

Ms. Quesenbery noted that while she agreed with Mr. Craft, she was still unsure on how the proposed resolution addresses the issues. "It is not entirely clear to me that a voluntary consensus standard is the best way to maintain this, long term. It might be that an open and perhaps transparent process would be the best way to maintain it in the long run. But I have not, for instance, seen the Access Board turn back to voluntary consensus standards for designing accessible web sites."

Ms. Caldas indicated that she believed the resolution did not conflict with previous resolutions including resolution # 31-05.

The motion was moved to a vote. The Chair asked Mr. Greene to call the roll. Resolution #36-05 was adopted 14 Yes, 0 No. (See table 1.).

The Chair asked Dr. Rivest to introduce his resolution.

Resolution # 37-05   Offered by Dr. Rivest

Title: Availability of Source Code for Review

The TGDC has reviewed the issue of the availability of voting system source code for review. The TGDC directs NIST to draft requirements stating that:
  (a) voting system vendors shall supply source code with any voting system submitted for evaluation,
  (b) the source code shall be retained, and

 (c) the source code shall be made available for review upon request to local, state, or federal election officials and/or their designated representatives.

NIST shall clarify these requirements to address a number of issues, such as how to handle third-party software for which source code may be unavailable, how to manage authorized access to the source code, availability of vendor-required tools (such as compilers) for source code review, and possible restrictions on reports resulting from source code reviews.

The resolution was seconded for discussion.

Dr. Williams expressed concern over this proposed resolution. " There are some of us that have concerns about open availability of source code. We are concerned that when you put this code in the hands of every teenage hacker in the country, good things are not going to happen. It has been my experience that anyone can gain access to the source code. So my first recommendation would be to vote this resolution down entirely. I would like to propose that we amend paragraph (a) to read 'voting system vendors shall provide source code with any voting system submitted to an ITA for evaluation for compliance with the voting system standards.' I would like to amend (b) to say 'the source code shall be retained by the ITA,' and I would like to delete paragraph (c) entirely."

The amendment was seconded.

Dr. Rivest viewed the amendments to paragraphs (a) and (b) as friendly. He reviewed the amendment to strike paragraph (c) as an unfriendly amendment.

Dr. Williams explained, "The resolution talks about making the source code available on request to local, state, or federal election officials and/or their designated representatives; that is entirely too vague."

Dr. Rivest agreed.

Dr. Williams noted that source code availability is already allowed in the marketplace. A Secretary of State can so state it in a contract proposal.

Mr. Craft concurred. "The issue as to the availability of source code, and the protection of the intellectual property: that is primarily covered in state law. Now, in Florida, we have a law that requires the source code to be provided to our office. There is also a law that makes it a felony for me to disclose it for anyone's use outside of its intended use. And I think most states have that. Also voting system testing labs cannot do their job if they do not have the source code. Beyond that, any state and any local jurisdiction that is controlling the payment to the vendor can see source code any time they want."

A number of the TGDC members expressed concern over the language in the resolution especially with respect to the definition of a local official and designated representatives.

There was a consensus that the definition of who has access to the source code needs to be refined.

Dr. Williams withdrew his amendment to omit paragraph (c). He inquired as to what the resolution will allow that cannot already be accomplished through state laws.

Dr. Rivest noted the issue of public perception that the voting systems are black boxes. "Nobody understands the systems except the vendors that know what is going on inside. The public needs to understand that the source code is available to elections officials. Having this as a requirement increases public confidence that the public officials do have the access to the source code. The resolution also allows the critical review of the source code for their testing purposes."

Mr. Berger raised the issue of someone obtaining the software through the Freedom of Information Act (FOIA) or various state open records acts.

Secretary Davidson noted two significant problems. I do not want to leave it in the hands of local officials because they are the ones that program the elections. Secondly, why provide the source code to the federal government. The state is running the federal elections. Who are you going to give it to at the federal level?"

Dr. Harding suggested that we reevaluate the resolution and consider the issue at a later time.

Because of the questions raised by FOIA possibilities relevant to the source code, Dr. Rivest withdrew the resolution for later consideration. "I think further study is appropriate. But I think the point here of setting the standards to increase the transparency issue is important. I think there is a lot of mistrust on the public at large for voting." Dr. Rivest thanked the Committee for working through the language of the proposed resolution.

Dr. Semerjian thanked the NIST staff for the work presented at the meeting. He noted that all TGDC members participated in at least part of today's meeting, which shows their concern for the importance of the work.

The Chair noted that the resolution adopted at this plenary meeting further instructs NIST staff on the research and drafting of standards recommendations. The adopted motion provides essential policy guidance on relevant voting standards issues. NIST staff in cooperation with the TGDC members will continue to make best efforts to accomplish the critical tasks most urgently needed by the election community as part of the recommendations to the EAC.

The Chair noted the next plenary session of the TGDC will occur here at NIST on April 20 and 21, 2005.The Chair adjourned the March 9, 2005, meeting of the Technical Guidelines Development Committee.

TGDC Resolution Voting   **Plenary meeting**   March 9, 2005

Resolution Number As Amended	Semerjian	Berger	Caldas	Craft	Davidson	Elekes	Gannon	Harding	Riffler	Purcell	Quesenbery	Rivest	Schützer	Turner-Buie	Williams	Tally Y-N-A
03/09/05 Roll Call	√	√	√	√	√	PM	√	PM	√	√	√	√	√	√	√	15
36-05	Y	Y	Y	Y	Y	Y	Y	Y	*	Y	Y	Y	Y	Y	Y	14-0-0

Y=Yes   N=No   A=Abstain   *=Not Present for Vote

Table 1