

# IEEE-SA Standards Board Project Authorization Request (PAR) Form (2001-Rev 1)

Note: After completing and saving this form, please send the form as an e-mail attachment to the NesCom Administrator. Please don't forget to fax the signature page.

If the Working Group is new to the process or if you are a new Working Group Chair/Sponsor Chair/Society Liaison and you feel it would be beneficial for staff to give a brief presentation on the process of developing a standard, please check here [ ]

1. Sponsor Date of Request: 2001 January 19

2. Assigned Project Number [P1583]

3. PAR Approval DATE [ ] {to be completed by staff}  
{Copyright release must be received with appropriate signatures by FAX (1-732-562-1571)}

4. Project Title, Recorder and Working Group/Sponsor for this Project Document type and title: {Place an X in only one option below}  
 Standard for the Evaluation of Voting Equipment  
 Recommended Practice for {document stressing the verb "should"}  
 Guide for {document in which good practices are suggested, stressing the verb "may"}

TITLE: [Standard for the Evaluation of Voting Equipment]

Name of Working Group(WG) : [SCC 38 - Voting System Standardization Coordinating Committee]

Name of Official Reporter (usually the WG Chair) who MUST be an SA member as well as an IEEE and/or Affiliate Member: [H. Stephen Berger ]

IEEE Standards Staff has verified that the Official Reporter (or Working Group Chair) is an IEEE and an IEEE-SA Member:  (Staff to check box)

Contact Information:  
Telephone: [512 864-3365] FAX: [512 869-8709]  
EMAIL: [stephen.berger@ieee.org]

Name of Working Group Chair (if different than Reporter): [ ]  
IEEE-Standards Staff has verified that the Working Group Chair is an IEEE and an IEEE-SA Member: [ ] (Staff to check box)  
Contact Information:  
Telephone: [ ] FAX: [ ]  
EMAIL: [ ]

Name of Sponsoring Society and Committee: [IEEE-SA Standards Board]  
Name of Committee Sponsor Chair: [ ]  
IEEE Standards Staff has verified that the Sponsor is an IEEE and an IEEE-SA Member: [ ] (Staff to check box)  
Contact Information:  
Telephone: [ ] FAX: [ ]

EMAIL: [ ]

5. Type of Project:

5a. Is this an update to an existing PAR? {Yes/No} [No]  
If YES: indicate PAR Number/Approval Date [P####-YEAR]  
If YES: is this project in ballot now? [NO] yes/no  
[Indicate changes/rationale for revised PAR in Item #16. This should be no more than 5 lines.]

5b. Choose from one of the following:

- [X ] New standard  
 [ ] Revision of existing standard {number and year} [ ]  
 [ ] Amendment to an existing standard {number and year} [ ]  
 [ ] Corrigendum to an existing standard {number and year} [ ]

6. Life Cycle

- [X ] Full Use (1-year life cycle)  
 [ ] Trial Use (2-year life cycle)

7. Balloting Information

Choose one from the following:

- [ ] Individual Sponsor Balloting  
 [ ] Entity Sponsor Balloting  
 [X ] Mixed Balloting (combination of Individual and Entity Sponsor Balloting)

Expected Date of Submission for Initial Sponsor Ballot: [12/31/2002]

8. Fill in Projected Completion Date for Submittal to RevCom [06/30/03]

9. Scope of Proposed Project: Develop a standard for the evaluation of election voting equipment.

10. Purpose of Proposed Project: The purpose of this project is to develop an evaluation standard for election voting equipment. The standard will provide technical specifications for electronic, mechanical, and human factors that can be used by manufacturers of voting machines or by those purchasing such machines. The tests and criteria developed will assure equipment:

- Confidentiality,
- Security,
- Reliability,
- Accuracy,
- Usability,
- Accessibility.

See Annex 1 for further explanation of the scope.

11. Intellectual Property {Answer each of the questions below}

Has the sponsor reviewed the IEEE patent policy with the group?

[Yes] {Yes/No} [No patent issues were identified.]

Are you aware of the possibility of any copyrights relevant to this project?

[No] {Yes/No}

Are you aware of the possibility of any trademarks relevant to this project?

[No] {Yes/No}

Are you aware of possible registration of objects or numbers due to this project?

[No] {Yes/No}

12. Are you aware of other standards or projects with a similar scope?

[No] {Yes, with explanation below/ No}

[ ] {Explanation} [State agencies charged with equipment selection have criteria they use but no recognized consensus standard is known]

13. International Harmonization

Will this standard (in part or in whole) be submitted to an international organization for consideration/adoption?

[No] {Yes/No/?? if you don't know at this time}

If Yes, please answer the following questions:

Which International Organization/Committee [ ]

International Contact Information:

Name: [ ]

Address: [ ]

Phone: [ ]

FAX: [ ]

Email: [ ]

14. Is this project intended to focus on health, safety or environmental issues?

[No] {Yes/No/?? if you don't know at this time}

If Yes: Explanation? [ ]

15. Mandatory Coordination

SCC 10 (IEEE Dictionary) by DR

IEEE Staff Editorial Review by DR

SCC 14 (Quantities, Units and Letter symbols) by DR

Additional communication and input from other organizations or other IEEE

Standards Sponsors should be encouraged through participation in the working group or the balloting pool. For this PAR in particular, coordination with the following organizations is desired:

- IEEE-USA Committee on Communications and Information Policy
- Federal Election Commission
- National Association of Radio and Telecommunications Engineers/Association of Access Engineering Specialists
- National Association of State Election Directors

16. Additional Explanatory Notes: {Item Number and Explanation}

[See Annex 2 for an example of the Texas State guidelines for disability access

to voting which will be considered in the development of this project.

] {If

necessary, these can be continued on additional pages}

The PAR Copyright Release and Signature Page must be submitted by FAX to 732-

562-1571 before this PAR will be sent on for NesCom and Standards Board approval.

---

---

## Annex 1: Discussion of Project

The purpose is to develop a standard by which electronic voting equipment may be evaluated for:

Confidentiality,  
Security,  
Reliability,  
Accuracy,  
Usability,  
Accessibility.

Confidentiality is a central requirement for voting equipment. The tests and criteria establish shall assure that a person's vote remains private and confidential. Test shall assure a high degree of confidence that a vote remains private. Therefore, there shall be assessment for a ballot cannot be accessed by unauthorized physical, acoustic and electromagnetic surveillance.

Security deals with the ability to manipulate ballots or the ballot totals. The tests and criteria for this issue shall assure that the equipment cannot be tampered with or controlled, except as specified by election officials.

Reliability testing is necessary to assure that the equipment will continue to operate as specified over a range of environmental conditions and reasonable period of time. It is anticipated that tests, such as HALT (Highly Accelerated Life Testing) may have a role in the evaluation criteria established. The equipment must also be tested for a variety of environmental factors, including temperature, humidity, shipping shock and vibration, electromagnetic and ESD immunity and other parameters.

Accuracy deals with the reliability of the vote tallies. The requirements here will assure that votes are not incorrectly recorded or missed.

Usability deals with the factors in the equipment that affect a user's ability to accurately cast a vote. This may be viewed as a sub-category of accuracy. However, as described above, accuracy focuses on the equipment, when used properly. Usability focuses on the likelihood that people, given their range of abilities and skills, will use the equipment accurately.

Accessiblity deals with the special issues presented by people with disabilities. The tests and criteria in this section will assure that a vote can be cast by a person with a disability as conveniently, privately and reliably as a fully enabled person would.

## Annex 2: Texas Accessibility Requirements for Voting Systems

Texas Administrative Code

Next\_RuleNext Rule>>

TITLE 1 ADMINISTRATION

PART 4 OFFICE OF THE SECRETARY OF STATE

CHAPTER 81 ELECTIONS

SUBCHAPTER C VOTING SYSTEMS

RULE §81.57 Requirements for Voting System Accessibility

(a) A voting system shall be accessible to voters with physical disabilities including no vision, low vision (visual acuity between 20/70 and 20/200, and/or 30 degree or greater visual-field loss), no hearing, low hearing, limited manual dexterity, limited reach, limited strength, no mobility, low mobility, or any combination of the foregoing (except the combination of no hearing and no vision, see subsection (b) of this section), by providing voters with physical disabilities with a practical and effective means to cast an independent and secret ballot in accordance with each of the following, assessed independently and collectively:

(1) The voting system shall provide a tactile-input or speech-input device, or both; and

(2) The voting system shall provide a method by which voters can confirm any tactile or audio input by having the capability of audio output using synthetic or recorded human speech, which is reasonably phonetically accurate; and

(3) The voting system shall provide a means for a voter to change the voter's selection prior to the voter casting the ballot; and

(4) Any operable controls on the input device that are needed for voters without vision shall be discernable tactilely without actuating the keys.

(Note: All the buttons on the device would not have to be discernable tactilely, only those buttons that are actually required for the individual to use the "operation without vision" mode.); and

(5) Any audio and non-audio access approaches shall be able to work both separately and simultaneously; and

(6) If a non-audio access approach is provided, the system shall not require color perception; the system shall use black text or graphics, or both, on white background or white text or graphics, or both, on black background, unless the office of the Secretary of State approves other high-contrast color combinations that do not require color perception; and

(7) Any voting system that requires any visual perception shall offer the election official who programs the system, prior to its being sent to the polling place, the capability to set the font size to a level that can be

read by voters with low vision. (Note: Although there is no standard font size for this situation, a san-serif font of 18 points as printed on a standard 8.5 x 11 piece of paper will allow the most universal access.); and

(8) The voting system shall provide audio information, including any audio output using synthetic or recorded human speech or any auditory feedback tones that are important for the use of the audio approach, through at least one mode (e.g., by handset or headset) in enhanced auditory fashion (i.e., increased amplification), and shall provide incremental volume control with output amplification up to a level of at least 97 dB SPL, with at least one intermediate step of 89 dB SPL; and

(9) For transmitted voice signals, the voting system shall provide a gain adjustable up to a minimum of 20 dB with at least one intermediate step of 12 dB of gain; and

(10) For the safety of others, if the voting system has the possibility of exceeding 120 dB SPL, then a mechanism shall be included to reset the volume automatically to a safe level after every use (e.g., when handset is replaced) but not before; and

(11) If sound cues and audible information, such as "beeps" are used, there shall be simultaneous corresponding visual cues and information; and

(12) If a non-audio approach is used in conjunction with an audio counterpart, any spoken text shall also be presented on screen, with the exception that any auditory confirmation of a voter's selection as required by subsection (b) of this section shall not be printed in text on the screen (Note: A graphic representation of a ballot with a check, "X," etc. beside a candidate or proposition is allowed.); and

(13) All controls and operable mechanisms shall be operable with one hand, including with a closed fist, and operable without tight grasping, pinching, or twisting of the wrist; and

(14) The force required to operate or activate the controls shall be no greater than 5 lbf (pounds per square foot); and

(15) If a forward approach by a person in a wheelchair to a voting system is necessary, the maximum high-forward reach allowed shall be 48 inches (1220 mm) and the minimum low-forward reach shall be 15 inches (380 mm). If the high-forward reach is over an obstruction, reach and clearances shall be as shown in the figure below or otherwise in accordance with the ADAAG, as

written at the time the system is certified for use in the state of Texas;  
and Attached <[http://info.sos.state.tx.us/fids/01\\_0081\\_0057-1.html](http://info.sos.state.tx.us/fids/01_0081_0057-1.html)>  
Graphic

(16) If a side or parallel approach by a person in a wheelchair to a voting system is necessary, the maximum side reach allowed shall be 54 inches (1370 mm) and the low side reach shall be no less than 9 inches (230 mm) above the floor. If the side reach is over an obstruction, reach and clearances shall be as shown in the figure below or otherwise in accordance with the ADAAG, as written at the time the system is certified for use in the state of Texas; and Attached <[http://info.sos.state.tx.us/fids/01\\_0081\\_0057-2.html](http://info.sos.state.tx.us/fids/01_0081_0057-2.html)> Graphic

(17) The highest operable part of controls, dispensers, receptacles, and other operable equipment shall be placed within at least one of the reach ranges outlined in paragraphs (15) and (16) of this subsection.

(b) Although we strongly encourage voting system vendors to strive to develop systems that will provide a secret ballot for all individuals, this office recognizes that the technology available at the time of the adoption of this section will not accommodate voters who have a combination of no hearing and no vision. A voting system may be considered accessible and in compliance with state law without allowing voters with a combination of no hearing and no vision to cast a secret ballot.

---

Source Note: The provisions of this §81.57 adopted to be effective September 17, 2000, 25 TexReg 8843