**Test Assertions for VVSG 1.0 Section 3.2.3**

**August 24, 2015**

**Requirement 3.2.3**

**VVSG 1.0 Requirement 3.2.3:** The voting process shall be accessible to voters who lack fine motor control or use of their hands.

**Note:** This is a high-level requirement that is fulfilled by the lower-level ones.

**Test Assertions**

None.

**Requirement 3.2.3a**

**VVSG 1.0 Requirement 3.2.3a:** The vendor shall conduct summative usability tests on the voting system using individuals lacking fine motor control. The vendor shall document the testing performed and report the test results using the Common Industry Format. This documentation shall be included in the Technical Data Package submitted to the EAC for national certification.

**Test Assertions**

**TA323a-1:** The manufacturer SHALL conduct realistic summative usability tests on the features of the voting system used by individuals with limited fine motor skills during the voting session.

**TA323a-2:** The summative usability tests SHALL be performed upon a completely functioning product.

**TA323a-3:** The summative usability tests SHALL use individuals who lack fine motor control (e.g., inability to grip a pencil) or who have no use of their hands at all.

**TA323a-3-1:** The population under test SHALL consist of a mix of voters including, but not limited to, users of different ages, genders, ethnicities, levels of education, voting experience.

**TA323a-3-2:** The population under test SHALL consist of voters who are eligible to vote in the U.S.

**TA323a-3-3:** The population under test SHALL NOT consist of voters who are, or have been, a poll worker, a voting machine manufacturer, a voting machine developer, in the marketing or sales of voting systems, or involved in any other position that is part of the voting process.

**TA323a-3-4:** The population under test SHALL NOT consist of voters who are involved with a usability or market research business/company.

**TA323a-3-5:** The population under test SHOULD NOT consist of voters who have previously participated in a voting system usability test.

**TA323a-4:** The manufacturer SHALL report the total number of participants tested and demographics of the participants.

**TA323a-5:** Manufacturers SHOULD describe their recruiting strategy. (from RFI 2013-04).

**TA323a-6:** The manufacturer SHOULD detail any compensation given to participants.

**TA323a-7:** The manufacturer SHALL describe how the voters were screened and selected.

**TA323a-8:** The manufacturer SHOULD note any differences between the users profiled as recruits and the users who participated in the actual study.

**TA323a-9:** The manufacturer SHALL ensure that at least eight test participants who lack fine motor control are able to complete the testing session, without assistance.

**TA323a-9-1:** The manufacturer SHOULD initially target at least 10 - 12 participants who lack fine motor control, in order to ensure that at least 8 individuals who lack fine motor control are able to complete the testing sessions.

**TA323a-10:** The manufacturer SHOULD ensure that at least 30 test participants are able to complete the testing session.

**TA323a-11:** The manufacturer SHOULD include detailed tables of all participant demographics, whether or not they completed the test, as an appendix to the test report.

**TA323a-12:** The manufacturer SHALL report the test results for all participants, whether or not they completed the test, using the Common Industry Format.

**TA323a-13:** The manufacturer SHOULD use the Modified CIF Template for manufacturers as a template and guidance for the semantics, content and testing.

**TA323a-14:** Manufacturers MAY define their own testing protocols for the summative usability tests.

**TA323a-15:** The Technical Data Package submitted to the EAC for national certification SHALL contain the summative Usability Test Report.

**TA323a-16:** The summative usability tests SHALL measure and report metrics for efficiency, effectiveness, and satisfaction as defined in the ISO/CIF standard (ISO/IEC 25062:2006).

**TA323a-17:** The test ballot used in the summative usability tests, conducted by the manufacturer, SHALL be realistic.

**TA323a-17-1:** The test ballot used in the summative usability tests SHOULD look like a real ballot, such as the NIST test ballot.

**TA323a-17-2:** The test ballot used in the summative usability tests SHOULD have 12 contests.

**TA323a-17-3:** The test ballot used in the summative usability tests SHOULD have 2 ballot questions.

**TA323a-17-4:** The test ballot used in the summative usability tests SHOULD have 5 propositions.

**TA323a-17-5:** The test ballot used in the summative usability tests SHOULD have at least one multiple-vote contest.

**TA323a-17-6:** The test ballot used in the summative usability tests SHOULD have at least one write-in contest.

**TA323a-18:** The test script used in the summative usability tests, conducted by the manufacturer, SHALL be realistic.

**TA323a-18-1:** The test script SHALL enable testing of all valid operations for the voter interface under test.

**TA323a-19:** The testing environment for the summative usability tests, conducted by the manufacturer, SHALL be realistic.

**TA323a-19-1:** The testing environment SHOULD be set up as it would be in a polling place.

**TA323a-20:** The summative usability tests conducted by the manufacturer MAY use the NIST medium complexity test ballot.

**TA323a-21:** The manufacturer SHALL ensure that the summative usability documentation/report is included in the TDP.

**TA323a-22:** The manufacturer SHALL ensure that the summative usability documentation/report conforms to the formatting and content requirements of the Common Industry Format (CIF).

**Requirement 3.2.3b**

**VVSG 1.0 Requirement 3.2.3b:** All keys and controls on the accessible voting station shall be operable with one hand and shall not require tight grasping, pinching, or twisting of the wrist. The force required to activate controls and keys shall be no greater 5 lbs. (22.2 N).

**Test Assertions**

**TA323b-1:** All keys on the accessible voting station SHALL be operable with one hand.

**TA323b-2:** All controls on the accessible voting station SHALL be operable with one hand.

**TA323b-3:** All keys on the accessible voting station SHALL NOT require tight grasping in order to operate them.

**TA323b-4:** All keys on the accessible voting station SHALL NOT require pinching in order to operate them.

**TA323b-5:** All keys on the accessible voting station SHALL NOT require twisting of the wrist in order to operate them.

**TA323b-6:** All controls on the accessible voting station SHALL NOT require tight grasping in order to operate them.

**TA323b-7:** All controls on the accessible voting station SHALL NOT require pinching in order to operate them.

**TA323b-8:** All controls on the accessible voting station SHALL NOT require twisting of the wrist in order to operate them.

**TA323b-9:** The force required to activate keys SHALL NOT exceed 5 lbs. (22.2 N).

**TA323b-10:** The force required to activate controls SHALL NOT exceed 5 lbs. (22.2 N).

**TA323b-11:** The force required to insert an activation card SHALL NOT exceed 5 lbs. (22.2 N).

**TA323b-12:** All controls on the accessible voting station SHALL be operable with a force that does not exceed five lbs.

**TA323b-13:** The force required to insert or remove a ballot, including use of any relevant controls, SHALL NOT exceed 5 lbs. (22.2 N).

**Requirement 3.2.3c**

**VVSG 1.0 Requirement 3.2.3c:** The accessible voting station controls shall not require direct bodily contact or for the body to be part of any electrical circuit.

**Test Assertions**

**TA323c-1:** The accessible voting station controls SHALL NOT require direct bodily contact in order to perform any voting operation.

**TA323c-2:** The accessible voting station controls SHALL NOT require the body to be part of any electrical circuit in order to perform any voting operation.

**TA323c-3:** All controls on the accessible voting station SHALL be operable by individuals using prosthetic devices.

**Requirement 3.2.3d**

**VVSG 1.0 Requirement 3.2.3d:** The accessible voting station shall provide a mechanism to enable non-manual input that is functionally equivalent to tactile input.

**Test Assertions**

**TA323d-1:** The accessible voting station SHALL provide a mechanism to enable non-manual input that is functionally equivalent to tactile input.

**TA323d-1-1:** Requirement 3.2.3d SHALL not be satisfied by expecting a voter who has limited dexterity or mobility to make use of a manual input device (e.g., touchscreen or buttons) in some other way (e.g., using one’s elbow, mouth stick, or head pointer).

**TA323d-2:** IF a non-manual input mechanism is provided by the accessible voting station, THEN all functionality of the accessible voting station (e.g., navigation, straight party voting, write-in candidates) available through other forms of input (e.g., tactile) SHALL be available through that non-manual input mechanism.

**TA323d-3:** The accessible voting station SHALL BE operable by individuals who do not have the use of their hands.

**TA323d-4:** The voter SHOULD be able to independently initiate use of the non-manual input mechanism.

**TA323d-5:** Once the non-manual input mechanism is enabled THEN the voter SHALL BE able to vote independently.

**Requirement 3.2.3e**

**VVSG 1.0 Requirement 3.2.3e:** If the normal procedure is for voters to submit their own ballots, then the accessible voting station shall provide features that enable voters who lack fine motor control or the use of their hands to perform this submission.

**Test Assertions**

**TA323e-1:** IF the non-accessible voting system provides features that enable voters to submit their ballots, THEN the accessible voting system SHALL provide features that enable voters who lack fine motor control to submit their ballots.

**TA323e-1-1:** Requirement 3.2.3e SHALL NOT be satisfied by expecting a voter who has limited dexterity or mobility to use some other body part to submit their paper ballot.

**TA323e-2:** IF the non-accessible voting system provides features that enable voters to submit their ballots, THEN the accessible voting system SHALL provide features that enable voters who lack use of their hands to submit their ballots.