CLEAR BALLOT GROUP

ClearAccess 1.0
Functional Description

Abstract: This document provides an overview of the features and components of the ClearAccess system.

ClearDesign System Overview

ClearAccess Part Number: 100049–10001

Clear Ballot Group

7 Water Street, Suite 700

Boston, MA 02109

(857) 250–4957

http://www.clearballot.com

Document history

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1. Abstract

This section defines the purpose of this document. It contains the following sections:

- About this document
- Scope of this document
- Intended audience

1.1 About this document

This document provides an overview of the features and components of the ClearAccess system. It corresponds to the VVSG 2005, Volume 2, Section 2.3 requirement for the technical data package.

1.2 Scope of this document

This section provides summary information about the following aspects of the ClearDesign system:

- Overall system capabilities
- Pre-voting capabilities
- Vote capabilities
- Post-voting capabilities
- Maintenance, transportation, and storage

1.3 Intended audience

This document is intended for state election officials and their delegated Voting Systems Test Laboratory, as part of the technical data package required to certify the ClearAccess election definition system for use in their state.

2. System overview

ClearAccess is an accessible ballot-marking system. The system allows a voter to make their selection using a touch screen, an accessible tactile keypad, a sip-and-puff headset, or a set of paddle switches.

The election data used by the ClearAccess system is prepared using ClearDesign, which creates an Accessible Data File (ADF) that is loaded on the ClearAccess device. ClearDesign creates a single ADF file that is loaded onto each of the ClearAccess devices that are to be used in the election.

Each ClearAccess device consists of a touchscreen computer running the Windows 8.1 operating system, a Brother laser printer, an EZ-Access keypad, and an Origin Instruments Sip/Puff.

ClearAccess is designed to comply with all VSS and VVSG requirements on color coding for messages and conveyance of information.

2.1 Election workflow

ClearAccess works in concert with ClearDesign and ClearCount to handle the following election processes:

- Accessible Voting
- Vote Tabulating
- Ballot Counting
- Election Reporting

The election data is prepared using ClearDesign. When the election data has been finalized an Accessible Data File (ADF) is generated by ClearDesign. The ADF file is loaded on to the ClearAccess device by the administrator (see section 3.1, "Access controls," for description of roles). On Election Day, the poll worker opens the polls to begin voting. The voters use the ClearAccess device to make their selections and then print a paper ballot. The paper ballot is then counted and tallied using the ClearCount system.

3.6 Restricted

The ClearAccess system has built-in checks to ensure that no capability is completely restricted from use. A particular user may be restricted from executing a specific operation, but ClearAccess always ensures that someone has access to that operation or can be given access to that operation.

If the operation restriction is due to an election state control, that operation can always be accessed by changing the election state to enable the specific operation.

3.6.1 Mandatory administrative procedures

See the *ClearAccess System Security Specification.*

4. Accuracy

This section describes the mechanisms by which the ClearDesign system ensures and demonstrates the accuracy of its results.

4.1 Record election accurately

The election definition is done using ClearDesign. ClearDesign creates a hashed method authorization code (HMAC) of the election data using the election code when the data is generated. When the ADF file is loaded onto the ClearAccess system, the administrator is prompted for the election code so that the system can validate the data prior to loading.

4.2 Record options for casting and recording votes

These options are set in ClearDesign.

4.3 Record votes accurately

ClearAccess is designed to work in conjunction with ClearCount to record votes. See the ClearCount Technical Data Package for this information.

4.4 Logic and controls for accuracy

ClearAccess is designed to work in conjunction with ClearCount to record votes. See the ClearCount Technical Data Package for this information.

4.5 Monitor overall data quality

The input data, ADF file, is validated using an HMAC to ensure the data quality.

4.6 Accurate recording, tabulating, and reporting of votes

ClearDesign is designed to work in conjunction with ClearCount to record votes. See the ClearCount Technical Data Package for this information.

5. Error recovery

The ClearAccess system includes several features that aid in error recovery. It is constructed to ensure that errors are not introduced into the system from issues with hardware, power, or connections. The system stores all data in appropriate protected files to prevent data corruption.

5.1 System and software errors

ClearAccess validates all data before attempting to update the system. It informs the user of any error or inconsistency to enable them to correct the error or inconsistency before updating the system.

5.2 Data backup and recovery

The only election data stored on the system is the static ADF file that was generated by ClearDesign. Therefore, the data can always be re-loaded from the original media.

5.3 Error message requirements

ClearAccess error messages include date and timestamp information, source of the error, severity, and a description.

6. Integrity

ClearAccess ensures data integrity and data protection by utilizing the following features:

- If the ClearAccess system fails, a replacement unit can be installed in the polling place to enable accessible voting to resume.
- The ClearAccess device uses a UPS to ensure that interruption of power will not cause an interruption of assessable voting.
- All access to the data requires login using a valid role and password
- ClearAccess uses COTS hardware that has been developed and tested to protect against physical threats such as interruption of electrical power, generated or induced electromagnetic radiation, and fluctuations in ambient temperature and humidity.
- ClearAccess validate data inputs prior to accepting the data.
- ClearAccess records all user interactions, along with the date and time of the event, in a log that can be viewed and printed by authorized personnel.
- ClearAccess checks the critical system components are operational prior to enabling the voting of each ballot.

7. System audit

7.1 Audit logs

The ClearAccess system has two types of logs: system logs, which are not associated with a specific election, and election logs, which are associated with specific elections.

Both type of logs are stored in a permanent file within the system to preserve their integrity at all times.

None of the log entries created by ClearAccess contain any voter-specific information or any information about voted ballots.

All of the log entries created by ClearAccess contain the following:

- timestamp—The time the event occurred
- Severity—The identifier of severity of the event
- user—The user associated with the event, if there is a user. There is no user for failed login attempts
- message—The message describing the event

The accessing and printing of logs is all controlled using the same mechanism used to control access to all other operations within the ClearAccess system.

7.2 Error messages

The ClearAccess system is an interactive system that detects and generates any errors found in real time and presents the error messages to the user as they occur.

The messages are displaying in plain text and do not use any form of numerical codes that the user is required to decode.

8. Election management system

ClearDesign is the Election Management System used by ClearAccess. See the ClearDesign Technical Data Package for more information.

9. Vote tabulating program

The vote tabulating is done by the ClearCount system. See the ClearCount Technical Data Package for this information.

10. Pre-voting capabilities

Almost all of the pre-voting capabilities are handled by ClearDesign.

10.1 Ballot preparation

This is handled by ClearDesign.

10.2 Election programming

The ClearDesign system generated an Accessible Definition File (ADF) for use by ClearAccess.

10.3 Ballot and program installation and control

The installation of the election definition (ADF) file is controlled by ClearAccess. Only users with appropriate credentials can install and ADF file.

When the ADF file was generated by ClearDesign, an election code was used to create HMACs, which are validated before installing the ADF file.

10.4 Readiness testing

Every time ClearAccess starts, it verifies the data in the ADF file to ensure its integrity and validity.

10.5 Verification at the polling place

The ClearAccess system is not a vote-counting system. See the ClearCount Technical Data Package for this information.

10.6 Verification at the central location

The ClearAccess system is not a vote-counting system. See the ClearCount Technical Data Package for this information.

11. Voting capabilities

The ClearAccess system is not a vote counting system. See the ClearCount Technical Data Package for this information.

12. Post-voting capabilities

The ClearAccess system is not a vote-counting system. See the ClearCount Technical Data Package for this information.

13. Maintenance, transportation, and storage

The ClearAccess system is not a vote-counting system. See the ClearCount Technical Data Package for this information.