

Motivation


Elections can be very different between and even within countries. Some elections have very simple ballots with only two candidates, while others such as the local elections in Baden-Württemberg or Hesse, Germany can contain more than 500 candidates. In addition, in these local elections, voters can perform cumulative voting (cast up to three votes for each candidate), vote splitting (cast votes for candidates of different parties), and cross out candidates. This results in huge ballots (for example, local elections in Darmstadt 2011, 35" x 27"). Manual tally of ballots is very error prone and time intensive. The tallying process in the local elections in Hesse takes between four to six days, even though poll workers have technical support, and enter votes individually into a tallying software. The vote casting process is also error prone resulting in a large number of invalid cast ballots. In order to improve the current situation the EasyVote system has been proposed. This system mainly addresses elections with complex ballots, however it can be used for any other type of election. The EasyVote system, is the only system that has been analysed and shown to comply with the German requirements for elections with electronic voting systems. This was achieved due to involvement of researchers in the research group of Prof. Alexander Rossnagel in the project.

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The content of the flyer is based on the research findings acquired by SECUSO research group at TU Darmstadt, which have been further developed at KIT since 2018. The EasyVote system is a hybrid (electronic/paper) voting system that has been developed within the project "Constitutional Compliant Electronic Voting" funded by the German research foundation.



The *EasyVote* System

A hybrid voting system
with paper back-up

INSTITUTE OF APPLIED INFORMATICS AND
FORMAL DESCRIPTION METHODS (AIFB)

Sie haben bisher noch keine Stimmen vergeben.

- 1 CDU
- 2 SPD
- 3 FDP
- 4 GRÜNE
- 5 DIE LINKE
- 6 UFFBASSE
- 7 BIG
- 8 PIRATEN
- 9 UWIGA
- 10 FWDA

- Ungültig wählen
- Eingaben löschen
- <<< Zurück zum Anfang
- Vorschau / Druck



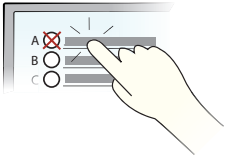
SECUSO
SECURITY · USABILITY · SOCIETY



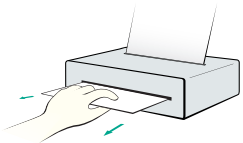
Vote casting with EasyVote



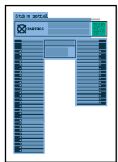
1. The voter provides an identification to the poll workers, similar to traditional elections.



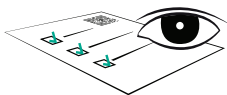
2. Afterwards, the voter enters the voting booth and uses the electronic voting device. The voter prepares the ballot by selecting the preferred candidates on the voting device. The voting device supports and provides feedback to the voter regarding the current state of the ballot, e. g. valid or invalid.



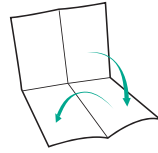
3. When the voter confirms the selected candidates, the ballot is printed. The electronic vote is deleted, so that no information is leaked about the cast votes from the voting device; vote secrecy is thus ensured.



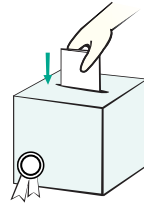
4. The printed ballot consists of two parts that contain the same data, namely the cast votes: a human-readable part and a QR-Code.



5. The voter verifies that the human-readable part contains the selected candidates.

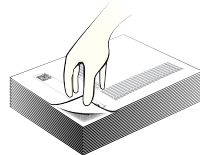


6. The voter folds the printed ballot twice.

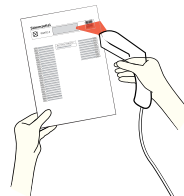


7. The voter leaves the voting booth and deposits the ballot into the ballot box.

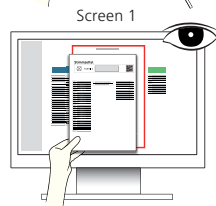
Tallying



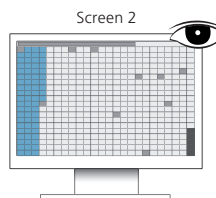
1. In the tallying process poll workers check that the number of cast ballots equals the number of voters.



2. Afterwards poll workers start with tallying/scanning each individual ballot.



3. Thereby poll workers scan the QR-Code and verify that its content, shown on the monitor, matches the human-readable part of the printed ballot.



4. After poll workers have verified the content and confirmed, the scanned ballot is added to the intermediate result, shown on a second monitor.

Goals and advantages of EasyVote

The goal of EasyVote is to support voters in the vote casting process and poll workers in the tallying process. EasyVote supports voters with feedback in the vote casting process and prevents them from spoiling their ballot unintentionally. In addition the printed ballot contains all cast votes ensuring that the manipulation of cast votes will not be unnoticed. The printed ballots and the electronic encoding of all cast votes in a QR-Code support poll workers and enable them to perform a more efficient and more accurate tallying process than the traditional process.



Further information on EasyVote

<https://secuso.org/easyvote-en>



To explanation video (in German)

<https://youtu.be/BMTWiQy3cuk>