

## Motivation

Elections can be very different between and even within countries. There exist different types of elections: Some elections have very simple ballots with only 2 candidates, while others such as the local elections in Hesse/Germany contain more than 500 candidates. In addition, in the local elections in Hessen, 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 (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, because voters unintentionally might spoil their ballot.

In order to improve the current situation, Volkamer et al. proposed the EasyVote system. This system mainly addresses elections with complex ballots, however it can be used for any other type of election too. 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.

## EasyVote

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.

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# EasyVote

The logo graphic for EasyVote features a stylized blue ballot box with a white crosshair, positioned to the right of the word "EasyVote" and slightly overlapping it.

**The EasyVote System**  
**A hybrid voting system**

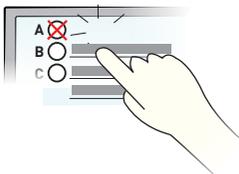
## Goals and advantages of EasyVote

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 enables them to not spoil their ballot unintentionally. In addition the printed ballot contains all cast votes, and therefore enables voters to better understand the implications of their cast votes. The smaller ballots and the electronic encoding of all cast votes in a QR-Code (two dimensional matrix of black and white dots that encodes data in binary form) support poll workers and enable them to perform a more efficient and more accurate tallying process than the traditional process.

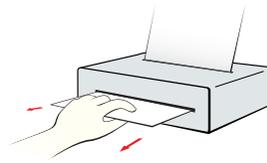
## Vote casting



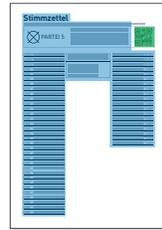
1. The voter identifies to the poll workers, similar to traditional elections.



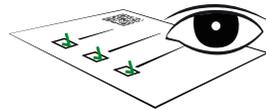
2. Afterwards, the voter enters the voting booth and uses the electronic voting device. The voter prepares the ballot by selecting the preferred candidates on the voting device. The voting device supports and provides feedback to the voter regarding the current state of the ballot, e.g. valid or invalid.



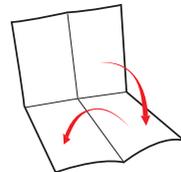
3. When the voter confirms the selected candidates, the ballot is printed. All electronic data are deleted. This serves to delete the sequential order of cast votes and make the process transparent for every voter, similar to traditional elections.



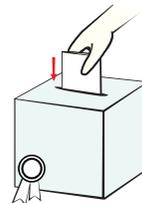
4. The printed ballot consists of two parts that contain the same data, namely the cast votes: a **human-readable** part and a **QR-Code**.



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

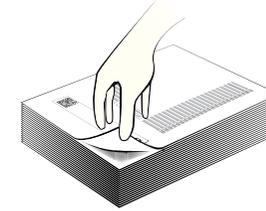


6. The voter folds the Din A4 printed ballot twice.



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

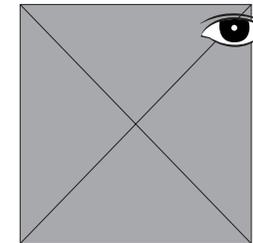
## Tallying



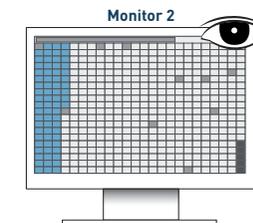
1. In the tallying process poll workers check that the number of cast ballots equals the number of voters.



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.