Selene: A Usable Voting System with Transparent Verifiability and Coercion Mitigation

Zollinger M., Ryan P., Rønne P., Iovino V., Rial A., Damodaran A.
SnT, University of Luxembourg

APSIA Research Group

Introduction

Selene is a user-friendly voting protocol which allows voters to participate in elections with end-to-end verifiability.

Security Guarantees

You can verify that your vote is tallied as intended.

Every voter is assigned a *unique* vote tracker number which is only revealed to them after the election has concluded, along with the original vote.

You can verify the outcome of an election.

After anonymising mixes, all votes and tracker numbers are publicly displayed on a bulletin board.

No one knows how you voted.

All votes are encrypted on the voter's device before they reach the election server, and the voter's tracker is communicated to the voter in a private and deniable way.

Coercion-Mitigation

Coercers typically aim to influence the outcome of elections by coercing voters to vote for a candidate of the coercer's choice. Selene allows a voter to reveal a fake tracker number to coercers, hiding their original vote.

Ease of Use

- The user interface and the protocol are backed by intensive international user studies.
- End-to-end verifiable voting schemes typically involve voters handling an encrypted ballot in order to confirm that their vote is accurately included in the tally. Selene uses simple trackers instead.

The Big Picture

- Selene reinforces trust in democratic elections at a time when malicious actors are actively sowing the seeds of doubt and distrust in voters' minds with regard to electoral procedures across the globe.
- Thanks to its user-friendly features and verifiability, the protocol and its security related aspects are easy to understand and to use.
- Selene engenders confidence in democratic processes and helps prevent election fraud and voter coercion.