

# Perils of e-voting in Estonia

My interventions 2015-2023  
and the future of digital democracy

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[pseudovote.net](http://pseudovote.net) | [isoc.ee](http://isoc.ee) | [hackest.org](http://hackest.org)

# Short history of electronic voting in Estonia

- Digitally minded politicians discovered the fascinating concept around 2000
- First research papers on possibility in 2001, the draft proposal 2003
- Test run 2005 in Tallinn, binding use in municipal elections autumn 2005
- Main local debates about uniformity 2003-2005, uncoercibility 2011-2013, verification 2015-2017, observability 2023-...
- International observers in 2007 suggested improving substantially or to discontinue, 2011 suggested verifiability, 2014 Halderman's intervention, 2015 recognized efforts, 2019 noted unconstitutionality of vote verification
- Improvements have been mostly reluctant, system has been always said to be perfect, in atmosphere of severe political opposition and conspiracies
- My take: <https://gafgaf.infoaed.ee/en/posts/perils-of-electronic-voting/>

# My interventions 2015-2023

- In 2015 by act of random hacking used debugger to change my vote in memory of official voting application thereby casting an invalid ballot
  - The interesting part was tracking if this will be handled correctly and it *probably* was
- Following years dug up the concept of end to end verifiability and demanded implementing it, was *partly* implemented in 2017
  - In 2019 contested the procedure in Supreme Court, which requested proper legal definition
  - In 2019 governmental working group underlined the need, but results never happened
- In 2023 created independent vote verification tool and voting tool prototype
  - Verification tool enables downloading digitally signed vote cryptograms => *hard evidence* of actual voter choice if combined with OCSP logs and official NEC query
  - Voting scripts allowed casting irregular votes and logging them => it appeared that DIY votes were following the legal specification and e-votes cast by official application *not so much*

# Some preliminary results of interventions

- There was no way to observe or address the irregularities during tally process
  - No access to actual data to verify the processes, personal data requests were suggested, but not fulfilled, details of the procedures were held back by NEC up to very last moment
- Filed election complaints about the irregularities, but none of them was processed => no legal contesting right or missed deadlines
- The fact that none of 312 181 e-votes had proper digital signature and votes failed to conform to vote format defined by legal acts is *pretty bad*
  - Maybe the irregularities could have been fixed, but there was no process to do it
  - Supreme Court opinions diverged, some stating they can't fulfill their duty of oversight
- As a result the observers of e-voting 2011-2023 created a joint statement specifying five demands for meaningful observation of e-voting
  - <https://rahvaalgatus.ee/initiatives/7b9ecdfa-3b56-45d4-a0f8-a52ced3e5803?language=en> or <https://vaatlejad.github.io/>

# Protecting e-voting as a national heritage?

- Privacy is based on controversial constitutional interpretation => actual implementation fails to provide ballot secrecy because of design decision
- Legal framework was specified in 2000s, but includes hacks, omissions and wishful thinking about personal data rights and constitutional principles
- Observability was initially provided by visually following the processes, but is hardly sustainable after ~20 years and 51% of votes cast electronically
- As a wicked problem e-voting needs solutions from legal, political and technical branch which normally do not speak the same language
- Not yet properly recognized by international community => not exported as such or scalable and more like “only possible in Estonia”
- Raises questions about future of digital democracy in general

# Topic of the next season still undecided

- Some of my complaints still waiting for a resolution at Data Protection Inspectorate, National Electoral Committee, Prosecutor's Office etc
- After Supreme Court resolution about legal unclarity there was public demand by major newspapers as well as President of Estonia to improve the situation
- Government has “e-voting on smartphone” in their action plan, but not fixing the legal framework, debate is happening hidden from the public – if at all
- There is law proposal to discontinue e-voting altogether by right wing EKRE, several petitions on e-voting submitted to parliament
- To be seen if there will be any major changes before EU election in June 2024 or the system will make another step toward self-destruction

If you want to discuss more you can find my contacts <https://infoaed.ee>