

# Total cost formula for e-voting implementation

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# Why do we need to know how much e-voting costs?

- demand from governments and the advocacy groups;
- cases of “discontinued use”: the Netherlands, Switzerland (Svensson & Leenes, 2003), the USA;
- demand from the citizen side (how much it costs to a budget, and whether the spending could be optimized):
  - a) cost control (hidden costs);
  - b) transparency.

***“There is no sufficient breakdown of costs in the public domain”,***  
The Institute for Digital Democracy, UK.

## Broader context

- Discourse: “government does not sell their services” (Brown, Myring, and Gard, 1999)
- Candidates’ spending/campaign costs; cost for a voter (Down, 1957; Haspel, & Knotts, 2005; Niemi, 1976; Colomer, 1991) VS administrative costs of elections
- Despite all development, elections are getting more and more expensive (inflation considered) (Montjoy, 2010)

***“If there is one thing that is particularly hard to pin down, though, it’s the question of how much running an election costs”,  
NCSL, USA.***

# Previous research

1. **California Association of Clerks and Elected Officials (CACEO) Election Costs Study:** cost comparison across California, “provide transparency”.

- Direct Cost Categories, detailing costs associated with staff Salaries and Services & Supplies, Election Technology survey to record hardware and software purchased
- election administrators tracked the costs

2. **The Cost of Registration and Elections (CORE) Project**

- budgets of Electoral Management Bodies (EMB's)

Findings:

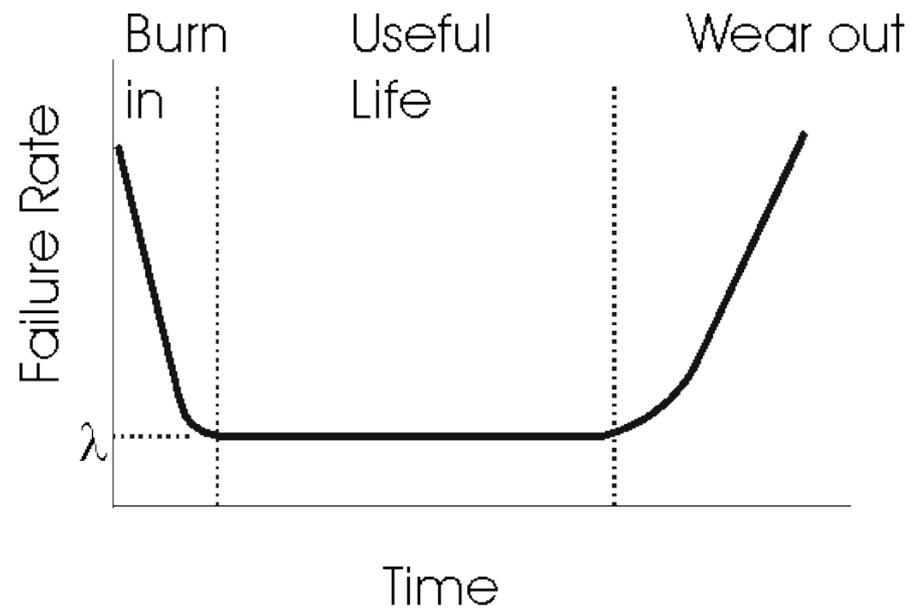
- the type of democracy environment (i.e. stable, transitional and post-conflict) matters

3. **Multichannel voting cost comparison**

# Theoretical framework

- No consensus whether implementation of i-voting reduces costs of holding elections (Qadah & Taha, 2007; Stoica, & Ghilic-Micu, 2016) or, to the contrary, is not cost-effective (Svensson & Leenes, 2003);
- Activity-Based Costing – ABC (Cooper, & Kaplan, 1992; Brown, Myring, & Gard, 1999);
- “Bathtub curve”
- Technology diffusion: 3 electoral cycles (Solvak and Vassil, 2016)

# “Bathtub curve”



Source: CMU (ECE) - Carnegie Mellon University

- ABC – not volume-driven accounting methodology
- Volume VS Activities

***“Activities have cause-effect relationship with cost incurrence”*** (Brown, Myring, & Gard, 1999: 7-8)

- Traditional ABC: the employees are asked to fill the form on how much working time they spend on every particular activity
- **Cost driver** - the frequency of events/actions instead of their volume. How many times the process was triggered?

# Research Questions

- How much remote e-voting costs?
- How implementation of the Internet voting impacts overall costs of election?

# Structure

- I. General costs of remote e-voting implementation
  - political, social, legal and technological implications of e-voting implementation in (Krimmer and Schuste, 2008);
  - identify processes;
  - a formula of expenses (per voter; per year);
  - the range of costs for every element.
- II. Test the formula on the case of Estonia
  - identify more cost-effective options;
  - identify hidden costs.
- III. Side effect: the menu of different options and models of e-voting implementation

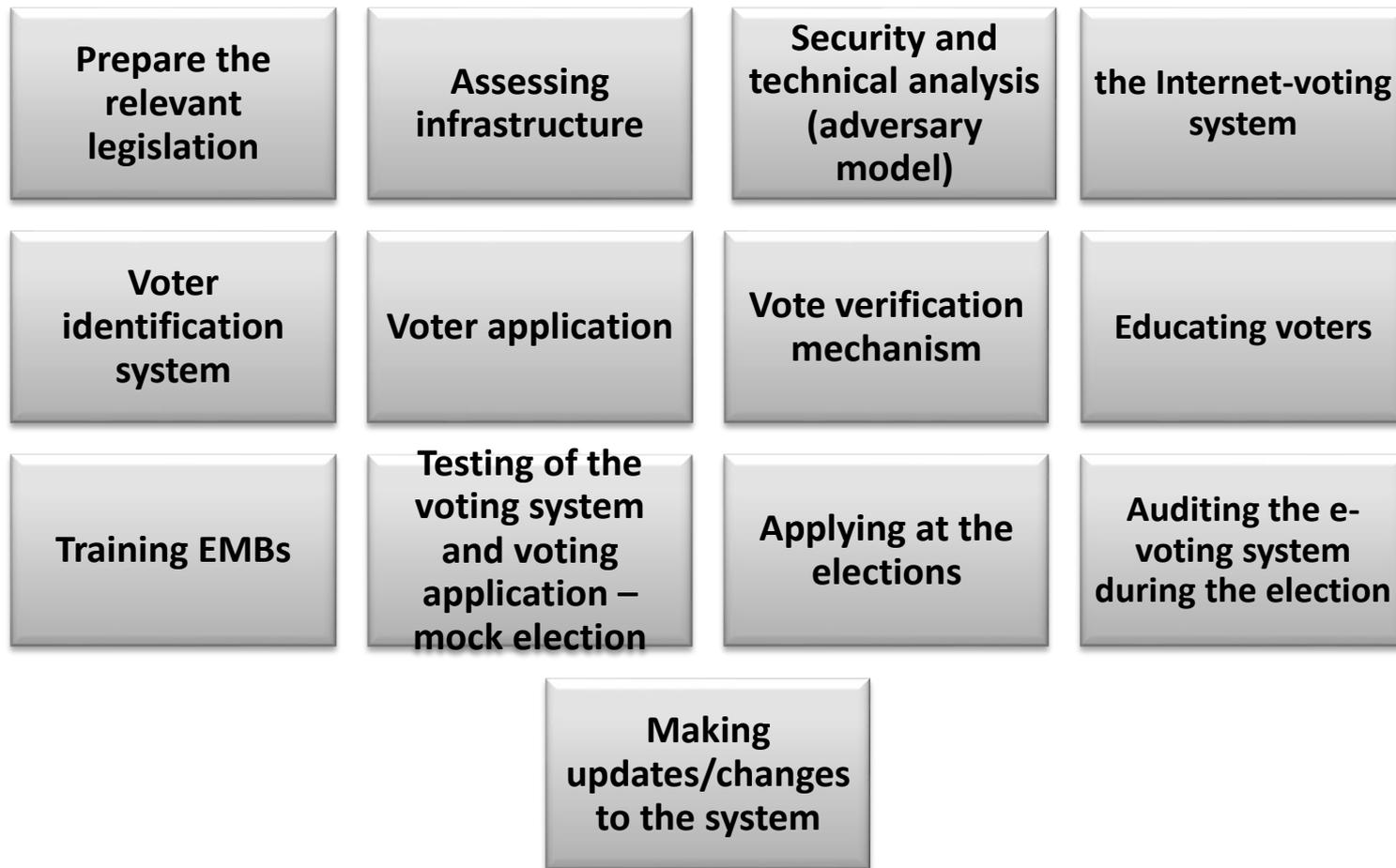
# Processes of remote e-voting (I)

***“Process - a series of actions or steps taken in order to achieve a particular end”, Oxford Dictionary***

- Reaching consensus (scales of i-voting, time period, primacy of a paper vote)
- Passing the relevant legislation
- Assessing infrastructure in order to understand how it can be used for i-voting
- Security and technical analysis – developing the adversary model
- Developing/ buying the Internet-voting system

## Processes of remote e-voting (II)

- \*Developing/ buying the voter identification system
- \*Developing/ buying the voter application
- Developing/ buying the vote verification mechanism
- Training the EMBs
- Educating voters
- Testing of the voting system and voting application – mock election
- Applying at the elections
- Audit of the e-voting system during the election
- Making updates/changes to the system



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## Case-study: Estonia

- Comparisons of costs over a long time-period
- Utilize from existing infrastructure (decrease the costs VS impose new costs on the existing infrastructure)
- Tough election schedule

# Internet Voting as Additional Channel for Legally Binding Elections: Challenges to Voting Processes Re-engineering

- why such offerings are being undertaken and how they influence and change the voting process and governance thereof, as well as how the adding/removing of Internet voting and other channels impacts overall costs thereof.

## Case-study: Estonia

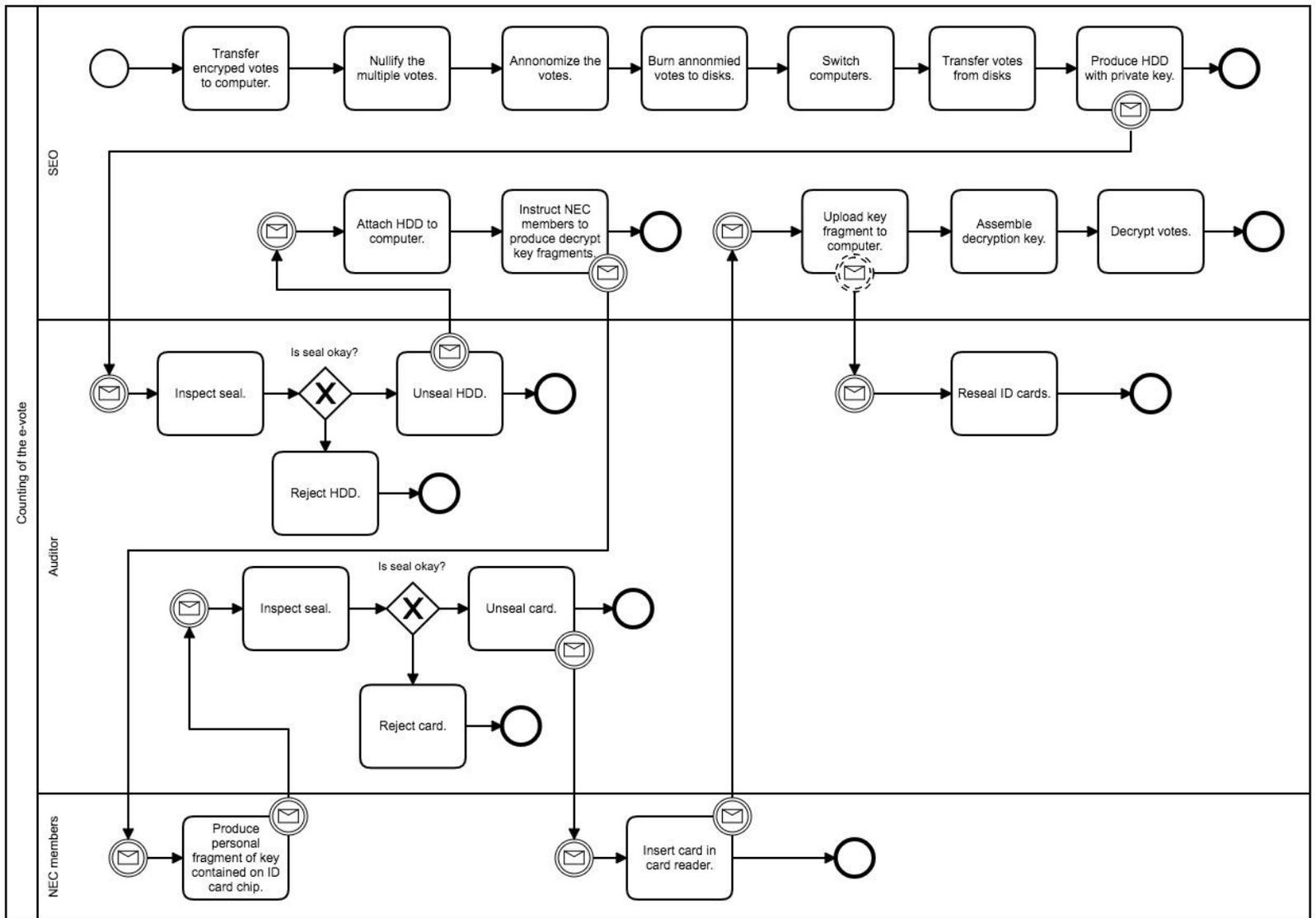
- identify processes and activities (N of people, time, cost driver);
- allocate costs;
- compare the costs;
- legislation analysis, process modeling, budget analysis; election observations, interviews with EMBs and NEC.



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# Discussion

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