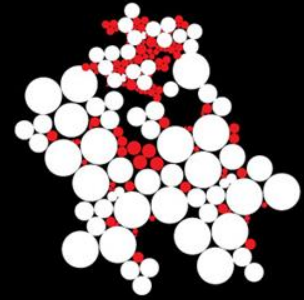


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## DUTCH E-VOTING OPPORTUNITIES

RISK ASSESSMENT FRAMEWORK BASED ON ATTACKER RESOURCES

*THOSE WHO VOTE DECIDE NOTHING. THOSE WHO COUNT THE VOTE DECIDE EVERYTHING.*

*— JOSEPH STALIN [1923]*



# WHAT IS E-VOTING?



# MOTIVATION AND BACKGROUND

## DEBATE IN THE NETHERLANDS

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- Postal voting for non-residents;
- 700.000 eligible voters;
- Only 5% of them actually vote.



# MOTIVATION AND BACKGROUND

## PROBLEM STATEMENT

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- Risk assessment methods lack:
  - Realistic scenarios (literature);
  - Categorization beyond “low, medium, high” (risk management).
- E-voting debate in the Netherlands therefore can not be based on objective arguments.



# FRAMEWORK

## RESEARCH RESULT

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- Framework based on attacker resources:
  - Time resources; (likelihood)
  - Financial resources.
- And number of victims. (impact)



# FRAMEWORK

## RESEACH RESULT

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- Framework based on attacker resources:
  - Time resources; (likelihood)
  - Financial resources.
- And number of victims. (impact)
  
- Framework results when applying to a scheme:
  - **Finding** “all” realistic attacks;
  - Attacks **quantified** based on above resources;
  - **Categorized** based on election safeguards;
  - Categories **comparable** to other schemes;
  - Leading to **mitigation** strategies for the scheme.



# CASE STUDY – INTERMEDIATE STEP

## QUANTIFY-STEP

- Gain one seat in the Estonian parliament:
  - Costs: approx 37K \$;
  - Time: 8 days working, 8 days waiting;
  - Assuming: a reasonably skilled attacker (like us 😊).
- This is just one attack!!



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### Botnet Rental for Installs

- Load Service: Buy \$110 / 1K installs (USA)

The screenshot shows the homepage of LoadsSell.com, a website for botnet rental services. The header features the company logo and navigation links for 'RUS' and 'ENG'. Below the header, there is a 'CONTACTS' section with three support options. The main content area is divided into 'ABOUT US' and 'OUR PRICE' sections. The 'ABOUT US' section describes the service and lists rules. The 'OUR PRICE' section contains a table of prices for different regions.

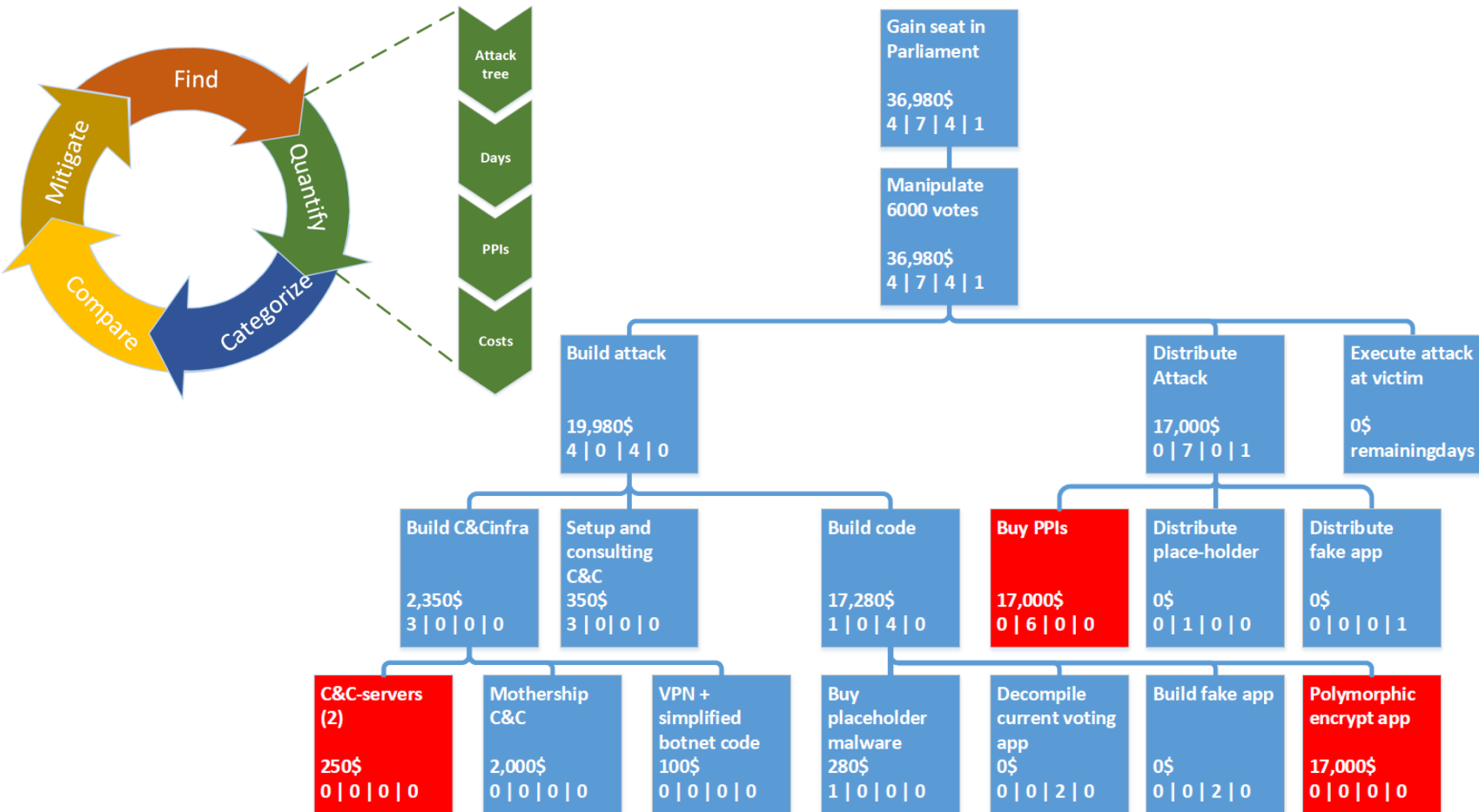
OUR PRICE:	
United States	\$110
All world	\$16
Mix with no Asia	\$30
Asia	\$8
Canada	\$100
Gb	\$150

Please contact with supports about prices for other countries

Botnets for sale.

# CASE STUDY – INTERMEDIATE STEP

## QUANTIFY



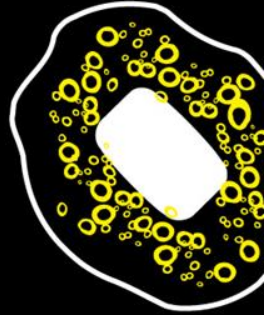


# CONCLUSION

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- Framework:
  - Find realistic risks;
  - Quantify these attacks;
  - Categorize, compare and mitigate these attacks.
- Experts from (e-)voting practice agree on usefulness and usability.
- This has the potential to fuel the Dutch e-voting debate.

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**QUESTIONS?**

THANK YOU FOR YOUR ATTENTION

