Reputable List Curation from Decentralized Voting

Crites et al. (2020)

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Motivation

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- Solution: **Token-Curated Registries** (TCRs)

Contributions

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Properties offered:

- Vote secrecy
- Dispute freeness
- Self-tallying

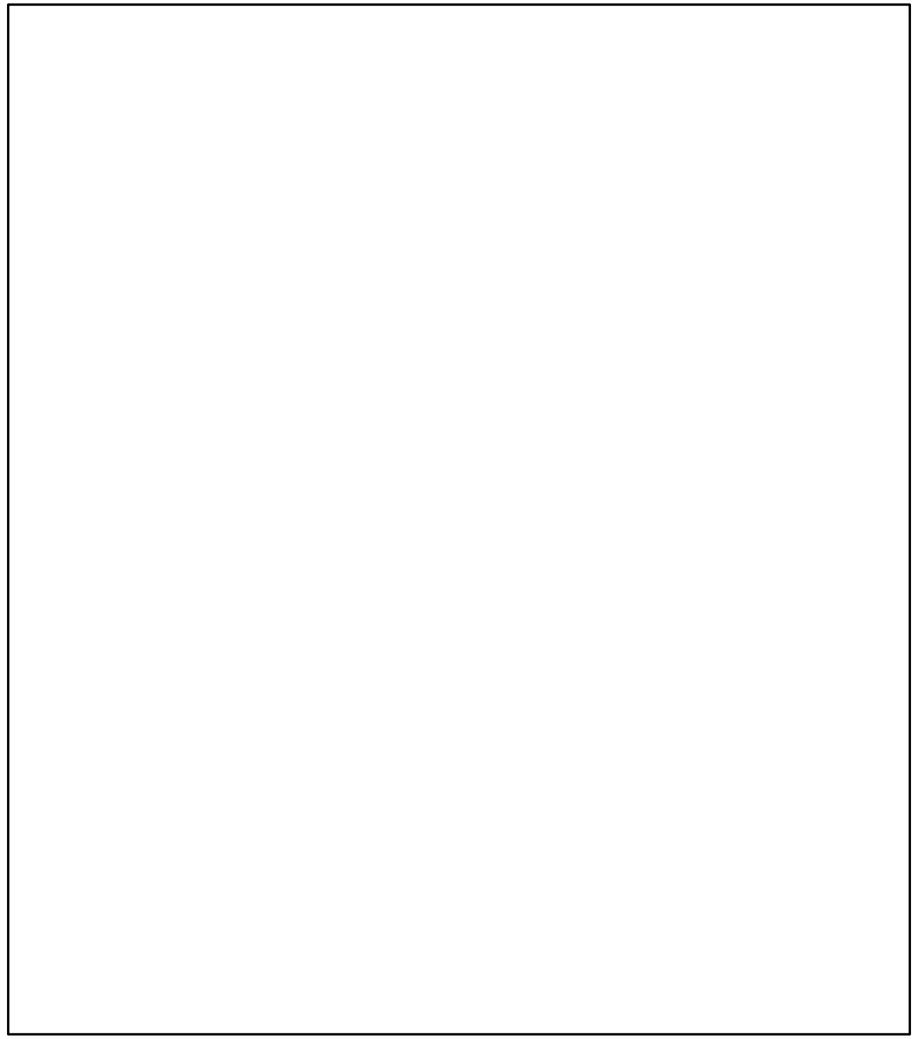
F. Hao, P. Ryan, and P. Zieliński, "Anonymous voting by two-round public discussion," IET Information Security, vol. 4, no. 2, pp. 62–67, Jun. 24, 2010, issn: 1751-8709, 1751-8717. doi: 10.1049/iet- ifs.2008.0127.

Background

- Blockchains
  - Turing-complete scripting language
- Smart Contracts
  - Deterministic
  - Transparent
- Token-Curated Registries

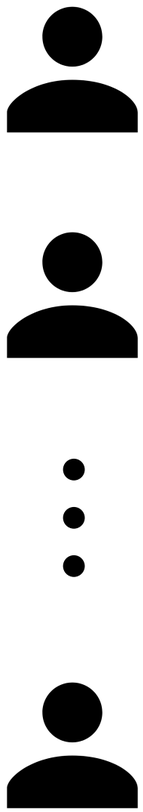
TCR Workflow

Contract (TCR)



TCR Workflow

Curators



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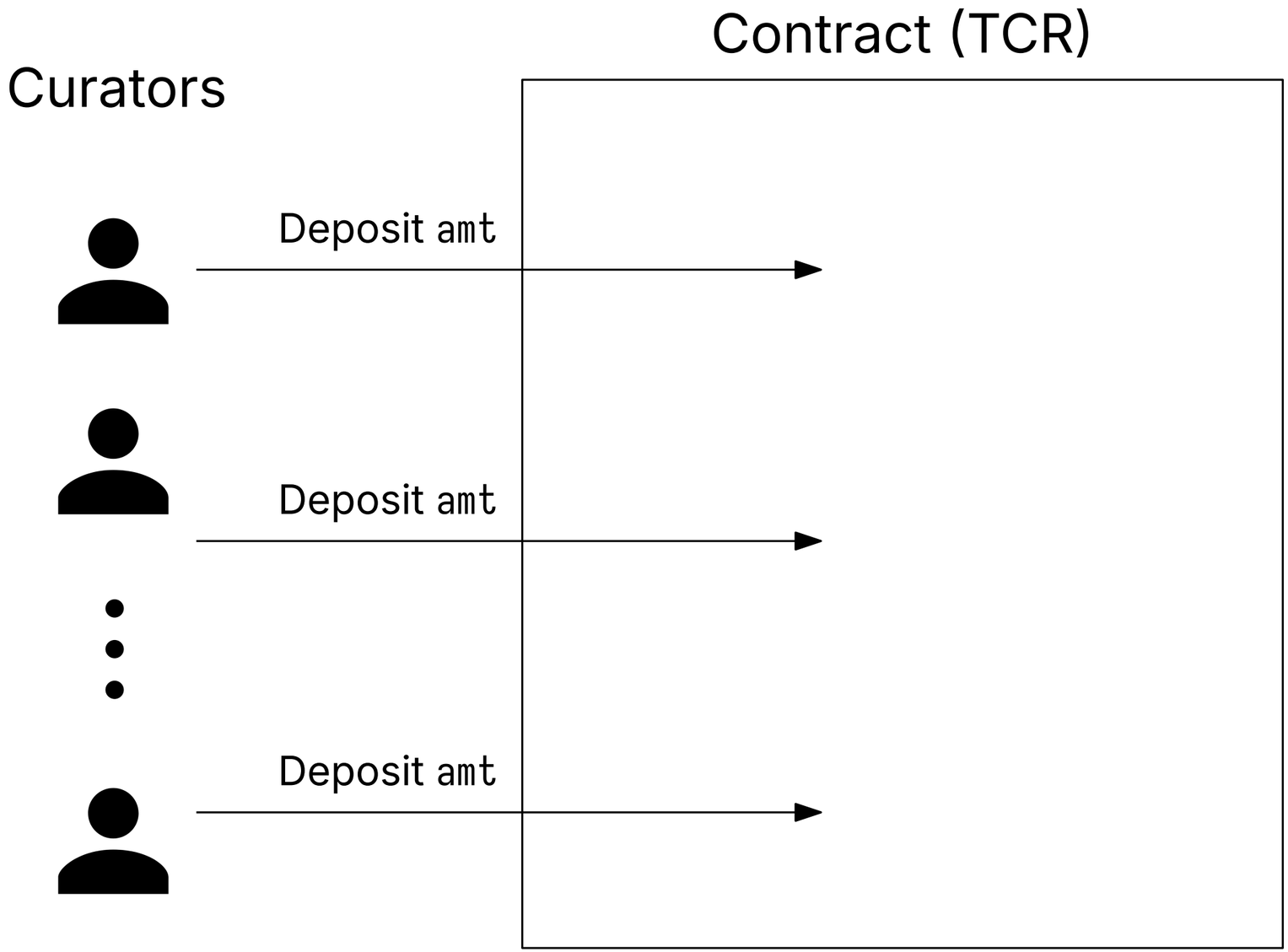

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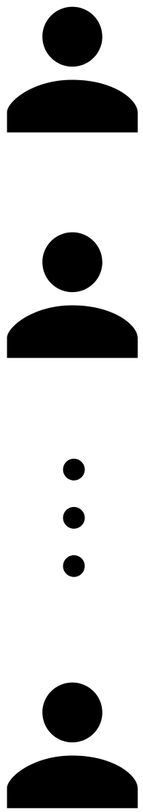
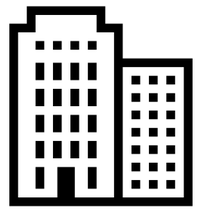


Service



Apply

TCR Workflow

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Contract (TCR)

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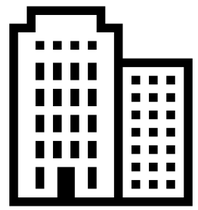

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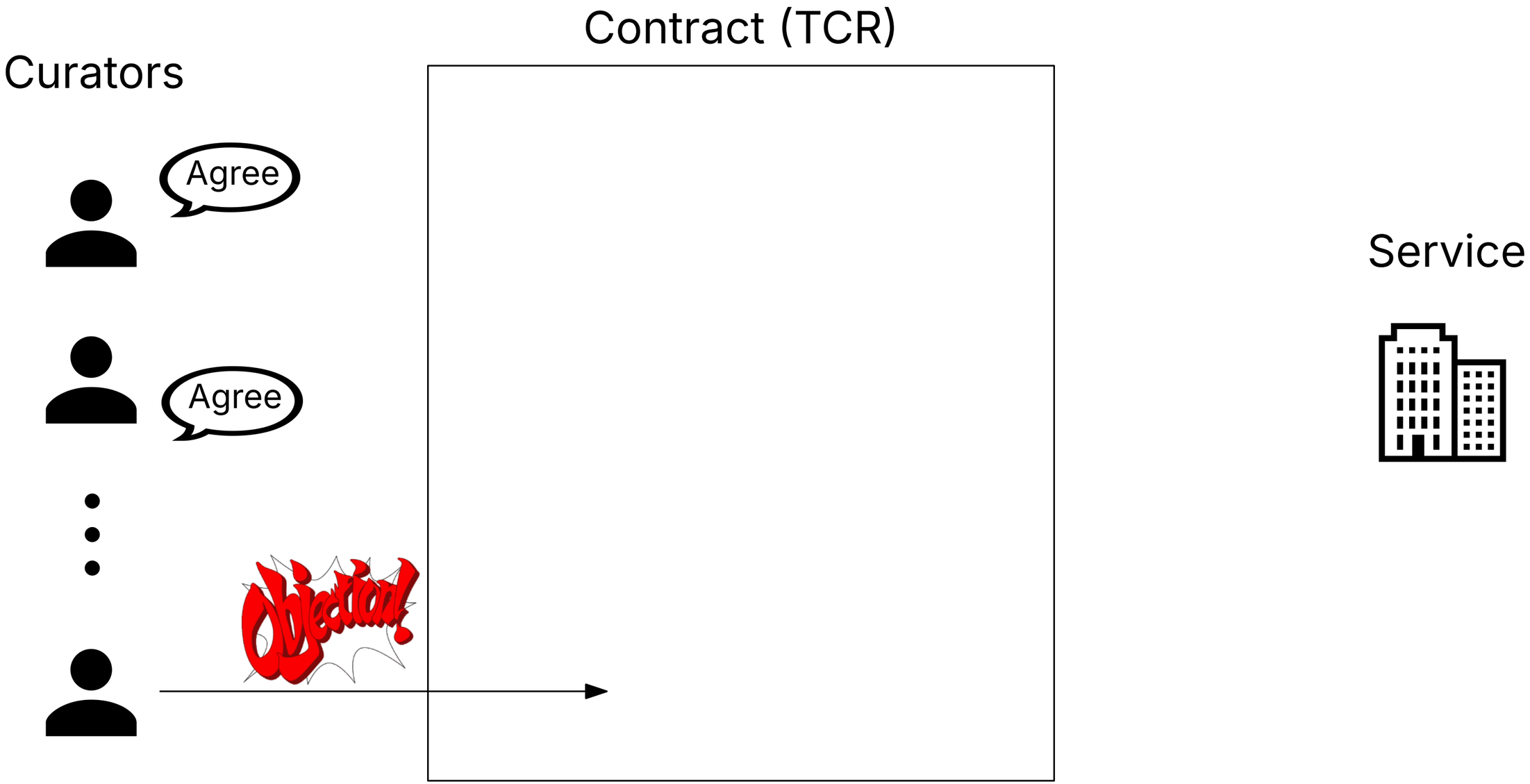

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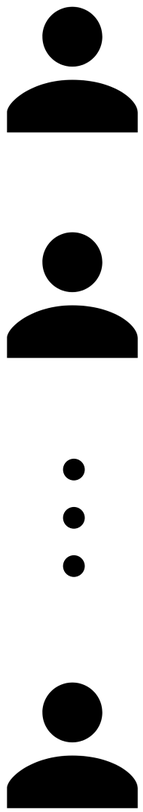

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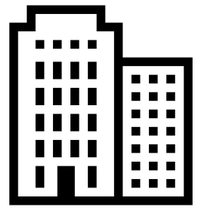

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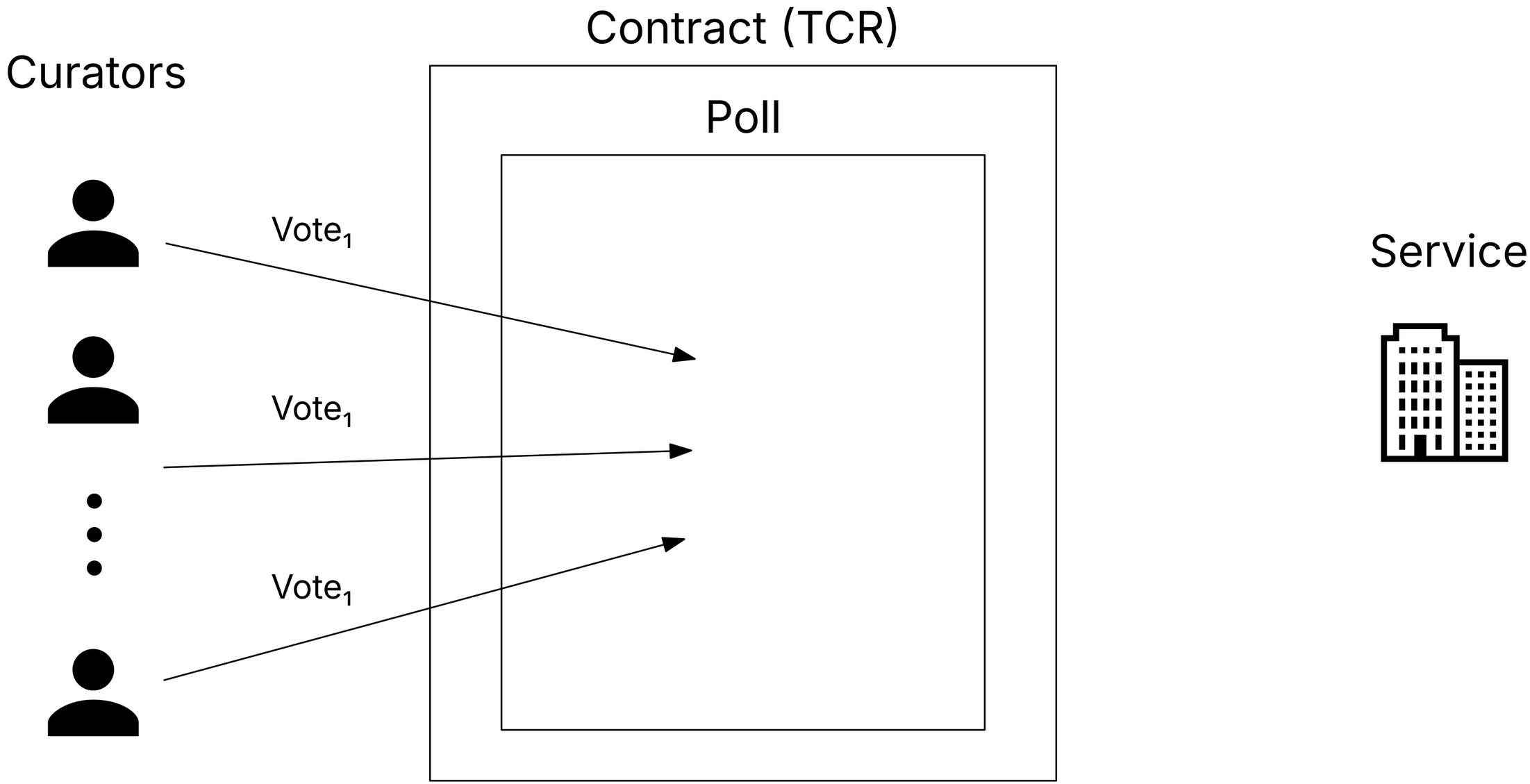

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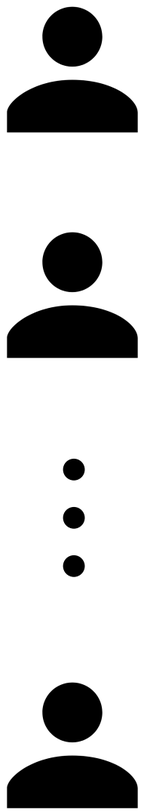

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Voters: *n*

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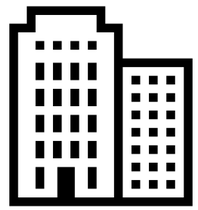

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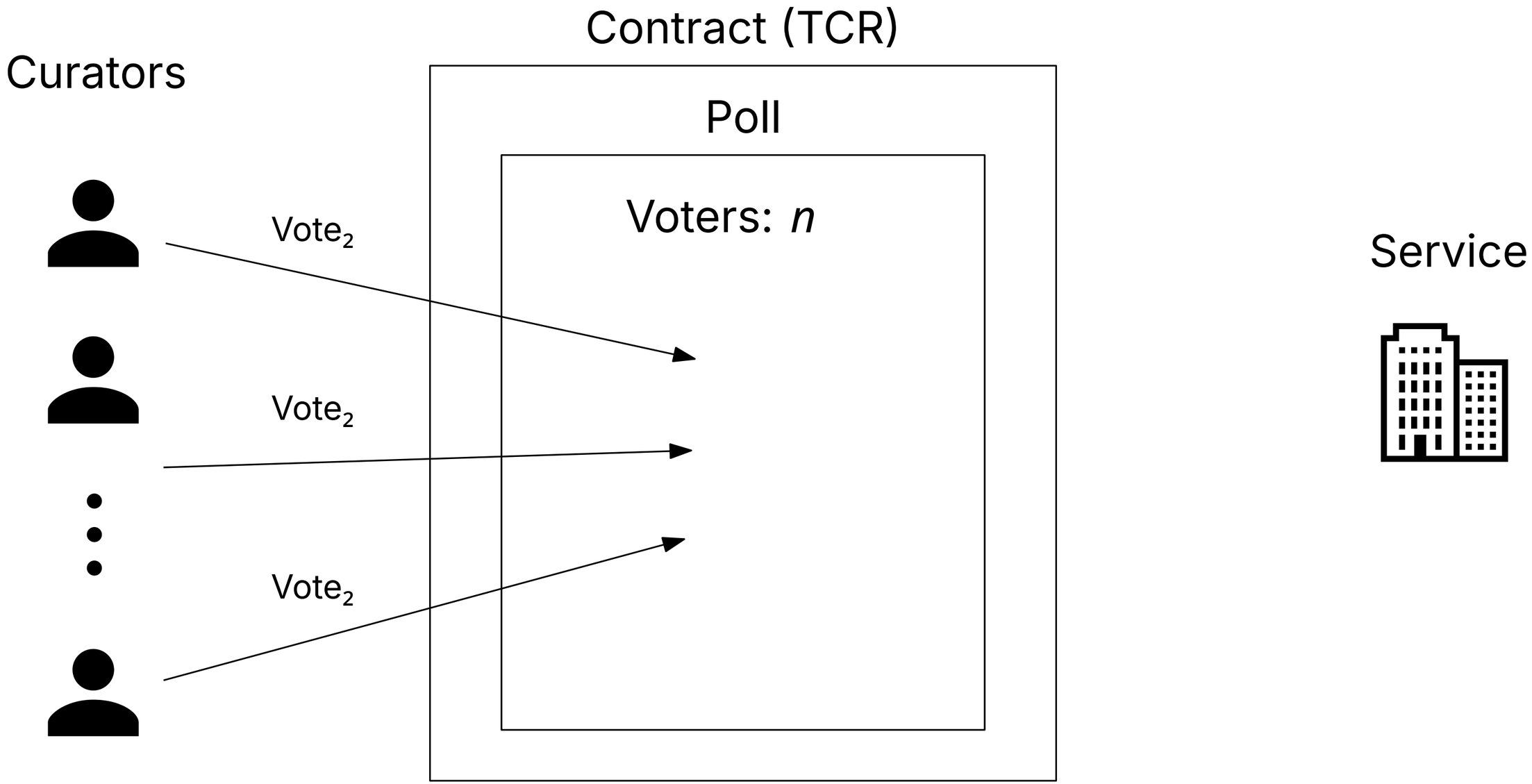

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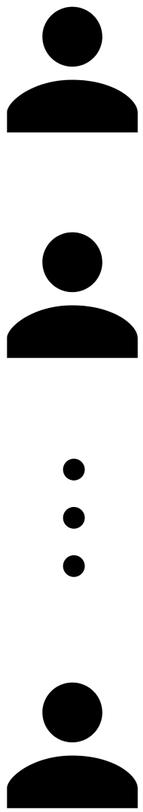

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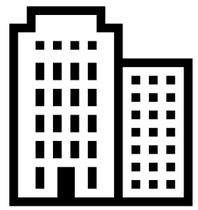

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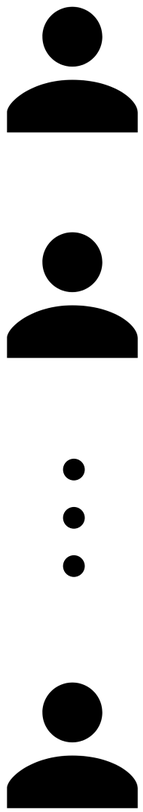

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Tally

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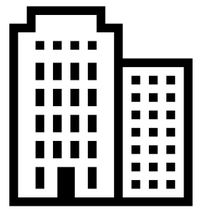

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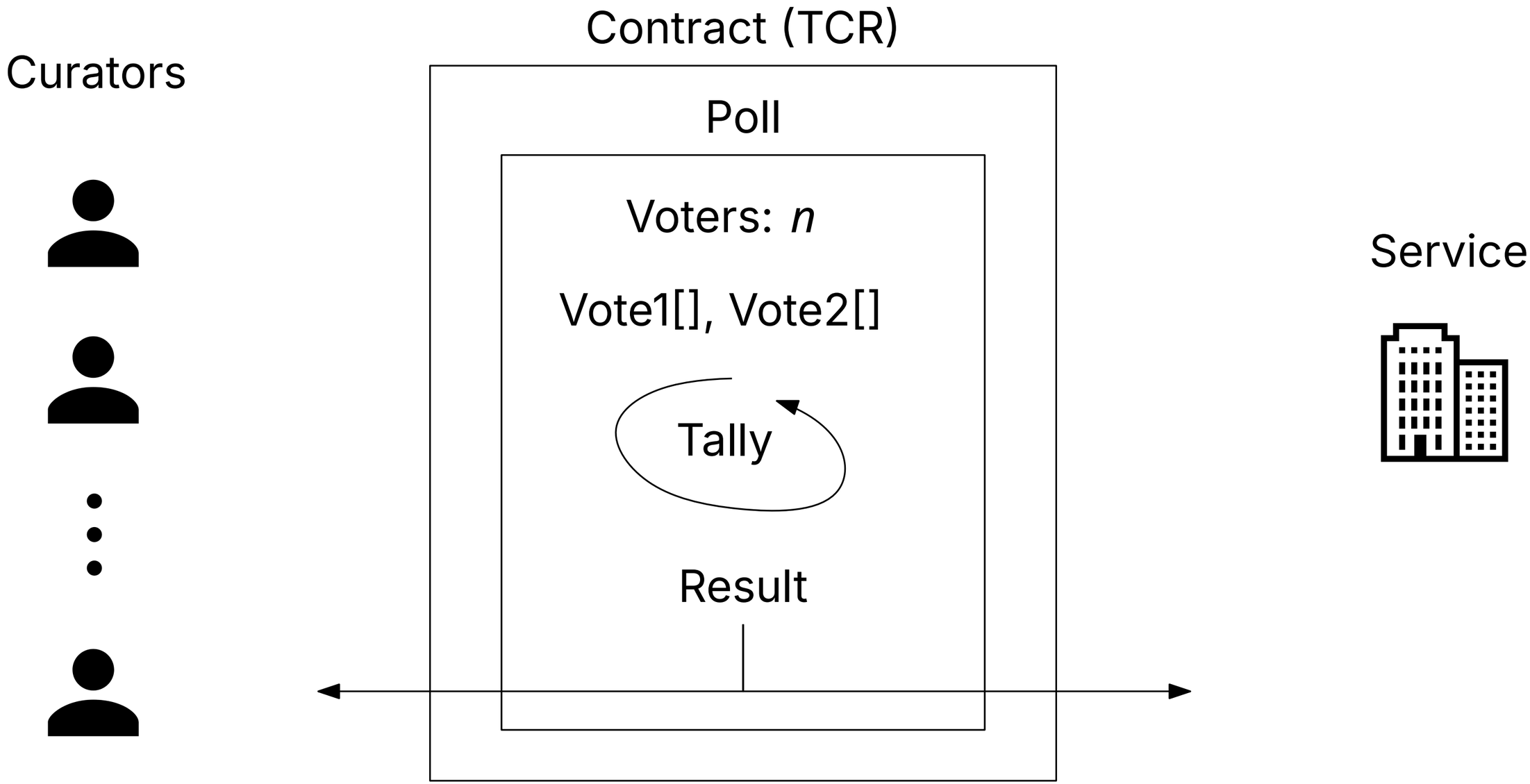

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Goals

- Gain information about the vote of an honest player
- Change vote between rounds or vote other than 0 and 1

Security Guarantees

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Vote secrecy: No honest player's vote can be discovered

J. D. C. Benaloh, Verifiable Secret-Ballot Elections. Yale University, 1987.

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Dispute freeness: No misbehaviour will go unnoticed

J. D. C. Benaloh, Verifiable Secret-Ballot Elections. Yale University, 1987.

Limitations

- Coercion/receipt freeness
- Performance dependent on number of voters

Conclusion

- Provably secure TCR construction
- Secret voting
- No trusted authority
- First formal approach to the subject

Questions?

Thank you!