

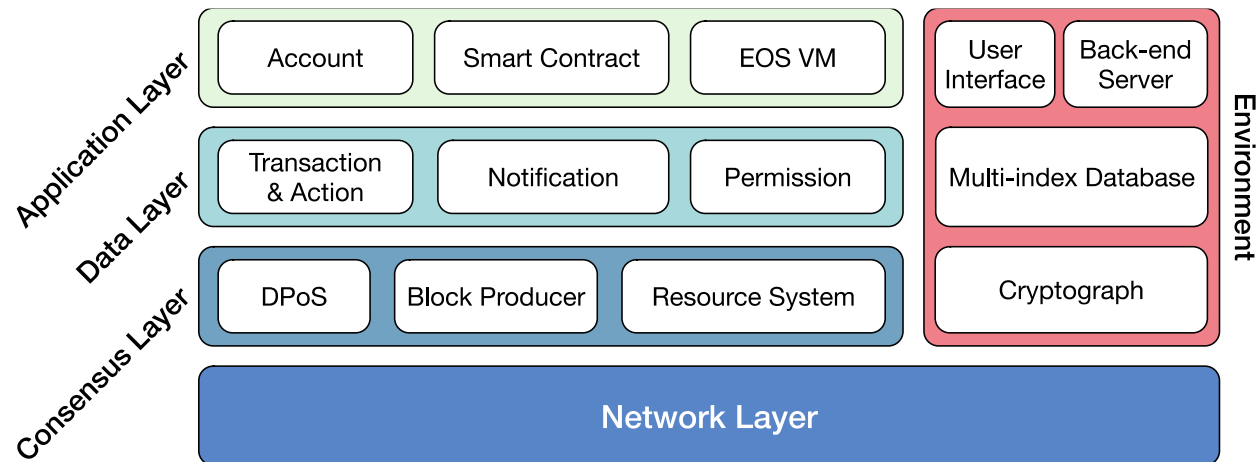
A Survey on EOSIO Systems Security: Vulnerability, Attack, and Mitigation

**Ningyu HE, Haoyu WANG, Lei WU, Xiapu LUO, Yao
GUO, Xiangqun CHEN**

Frontiers of Computer Science, DOI: [10.1007/s11704-024-3278-y](https://doi.org/10.1007/s11704-024-3278-y)

Problems & Ideas

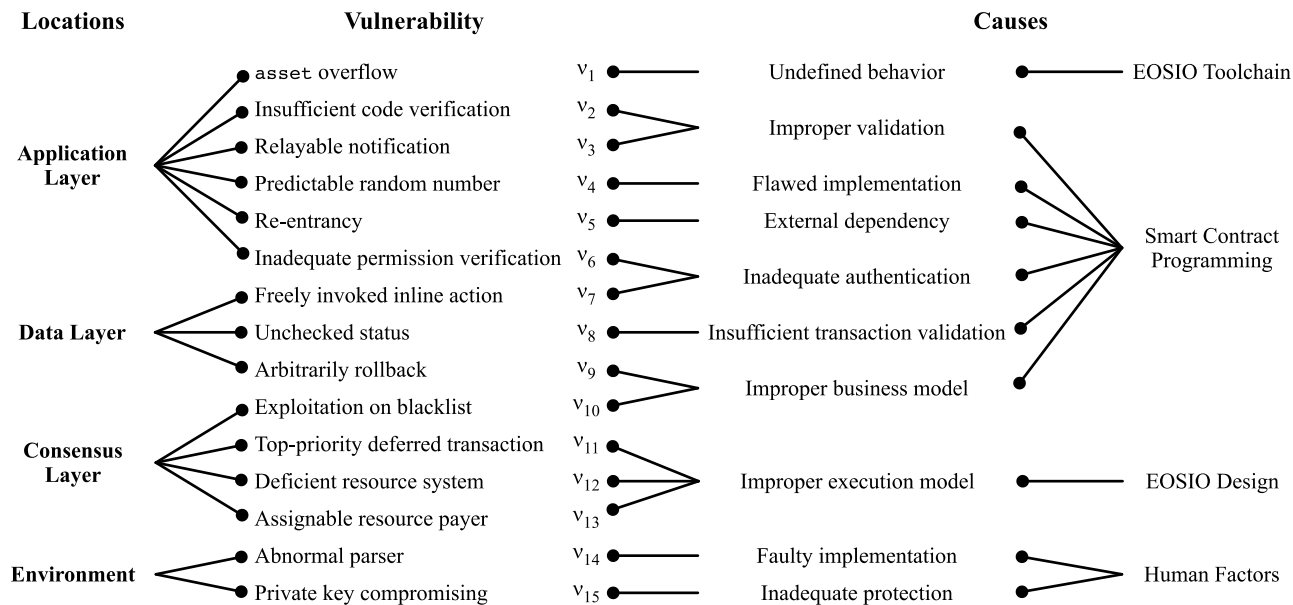
- To the best of our knowledge, no existing work investigates EOSIO systems security:
 - EOSIO adopts new lots of new features, like DPoS consensus algorithm.
 - EOSIO has raised the world's largest ever ICO, more than \$4 billion.
 - Attacks frequently happen on EOSIO systems.
- Ideas: Abstract the complicated EOSIO ecosystem into components following hierarchical relationships, investigate root causes of all existing vulnerabilities.



Structure of abstracted components in EOSIO ecosystem.

Main Contributions

- Contributions:
 - The first systematic review of vulnerabilities in the EOSIO ecosystem, ranging from smart contracts to the consensus algorithm;
 - We comprehensively survey all existing attack events against all vulnerabilities, as well as their direct consequence and attack tactics;
 - We study all existing mitigations on identifying vulnerabilities or attack events, including program analysis and transaction analysis;
 - We propose a set of best practices for developers, EOSIO maintainers, and security researchers.



Vulnerabilities and their corresponding locations and direct causes.