Towards Secure Layer-2 Blockchain Solutions Using TEEs

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Contextualization

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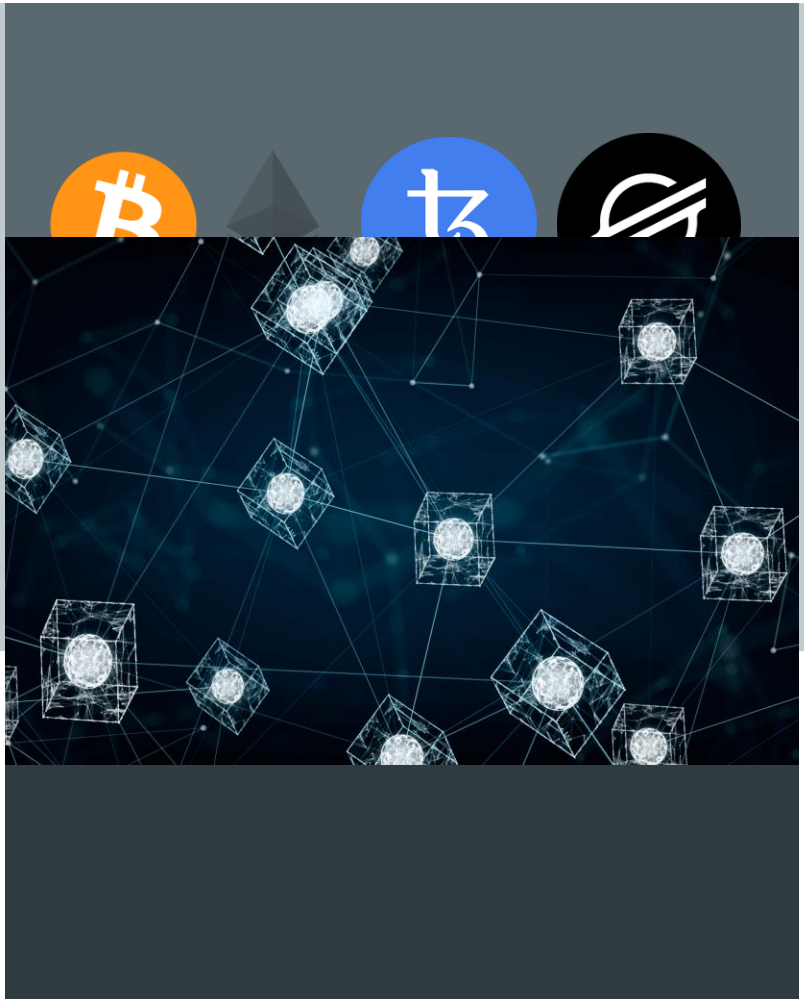
- Transactions are duplicated and distributed across the entire network of computers on the blockchain.
- Nowadays, Blockchain is often associated to cryptocurrency, because is the core technology behind, Bitcoin and Ethereum.

Blockchain – Vulnerabilities



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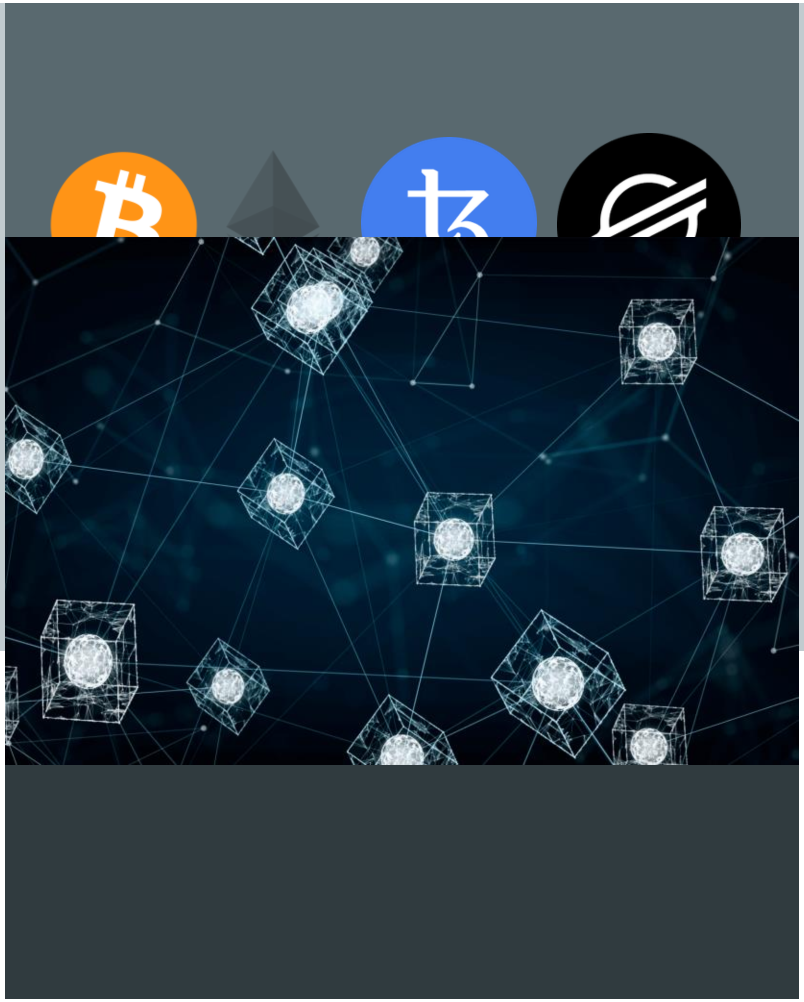

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- Integer overflows
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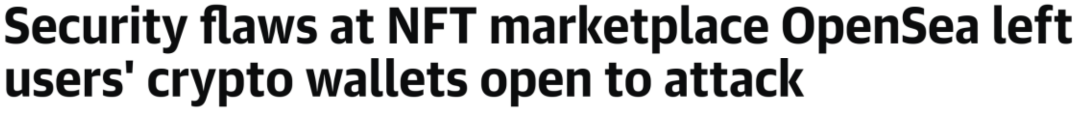
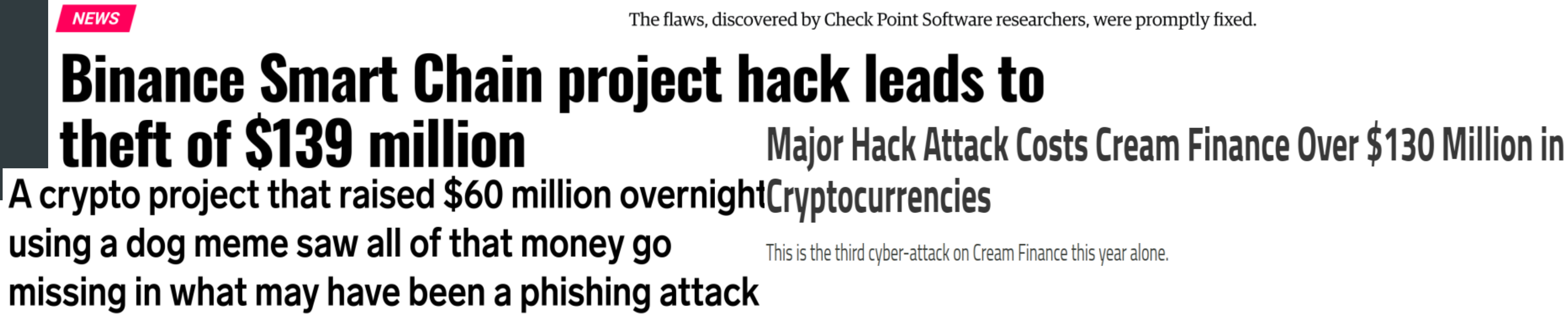


Security flaws at NFT marketplace OpenSea left users' crypto wallets open to attack



The flaws, discovered by Check Point Software researchers, were promptly fixed.

NEWS

Binance Smart Chain project hack leads to theft of $139 million

Major Hack Attack Costs Cream Finance Over $130 Million in Cryptocurrencies

This is the third cyber-attack on Cream Finance this year alone.

A crypto project that raised $60 million overnight using a dog meme saw all of that money go missing in what may have been a phishing attack

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- We will study how TEE can improve Blockchain security problems

Motivation

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Work in upcoming platforms
- RISC-V Architecture -

Work in Security Analysis

Work with TEEs

Work with Linux

Work in open-source projects

Work with Blockchain Technology

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- Create a threat model for a Blockchain solution (Cartesi)

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- Threat Analysis
- Threat mitigation using TEEs

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Blockchain Technology are not yet adopting TEEs as security method

Although it is secure, transparency brings some problems

"Simplicity is the ultimate sophistication" - Leonardo da Vinci

THANK YOU!

| Vitor Ribeiro a86619 |