

Rectifying Administrated ERC20 Tokens

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2021



Outline

- 1 Introduction
- 2 Administrated Patterns
- 3 Evaluation
- 4 SafelyAdministrated
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Background and Definitions

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1      function issue(uint amount) public onlyOwner {  
2          require(_totalSupply + amount > _totalSupply);  
3          require(balances[owner] + amount > balances[owner]);  
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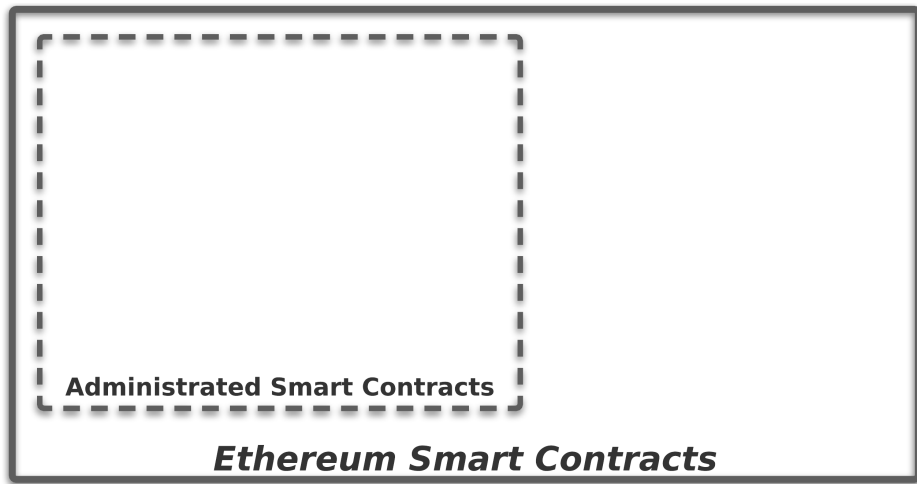
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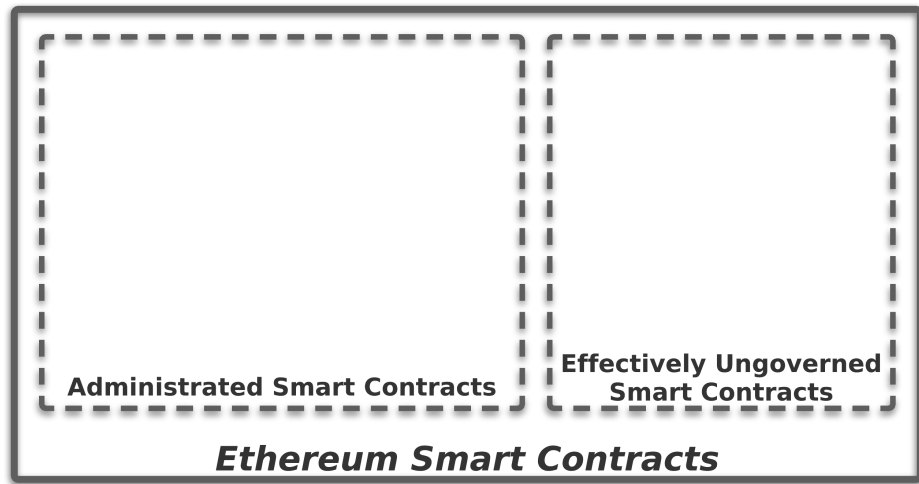
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Ethereum Smart Contracts

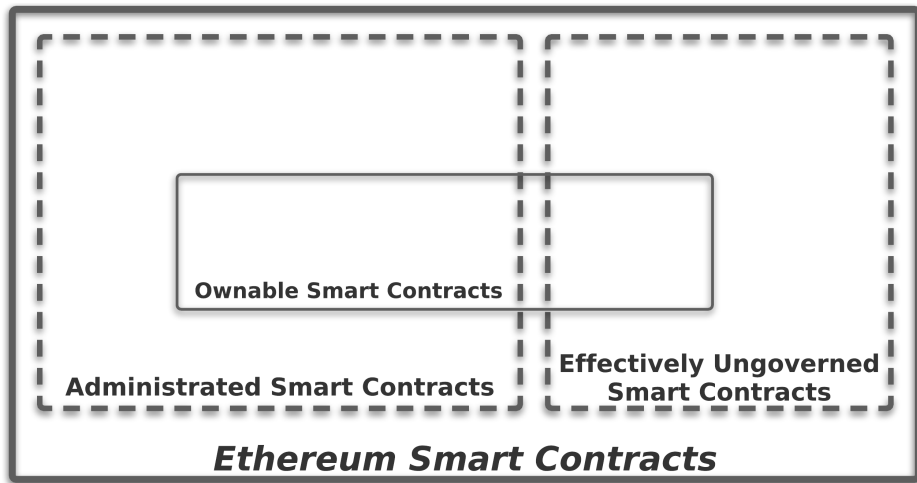
Smart Contracts: Management Taxonomy



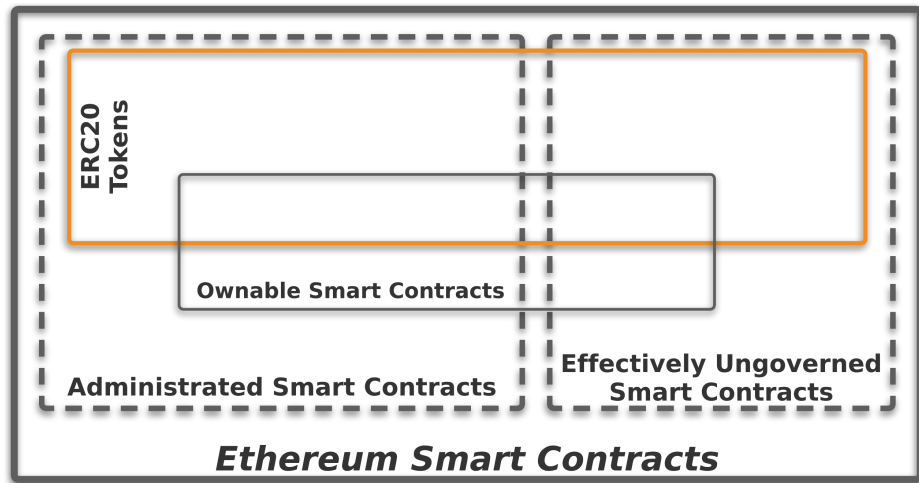
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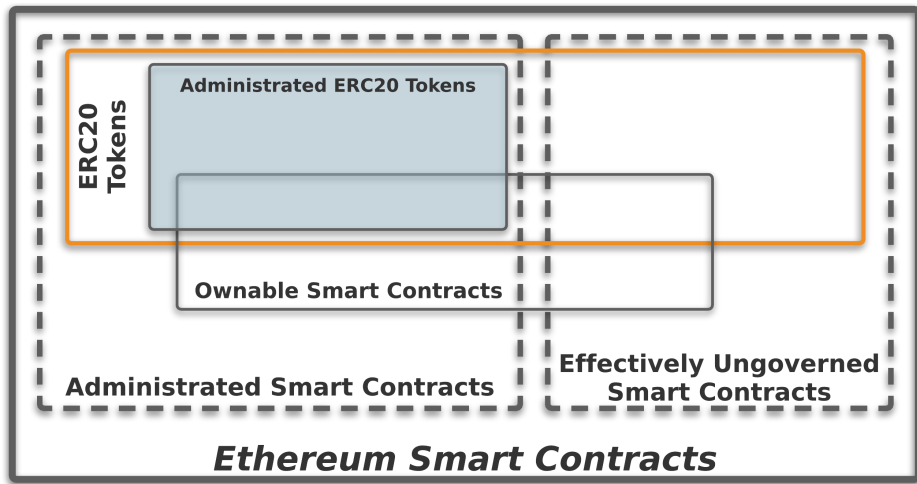
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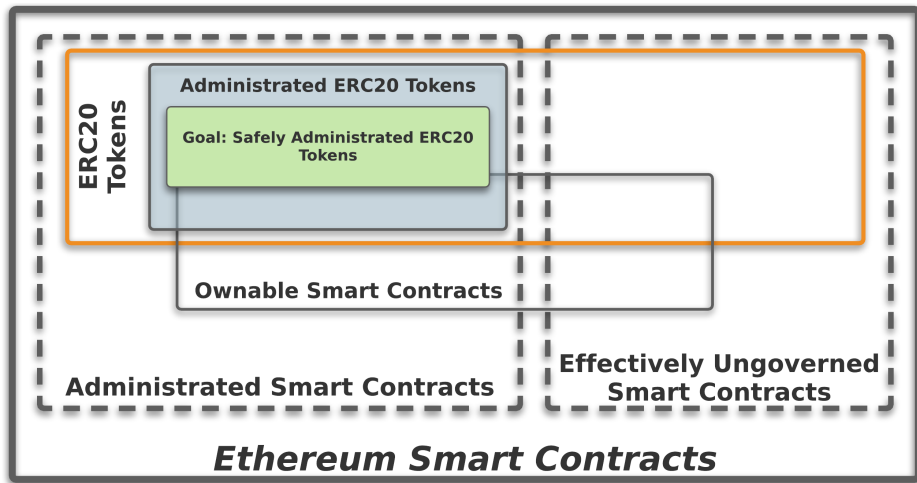
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Administrated ERC20 tokens are less safe than the traditional services they are designed to disrupt!

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Self-Destruction

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Fee address replacement is easily exploitable:

Ivanov et al. *“Targeting the Weakest Link: Social Engineering Attacks in Ethereum Smart Contracts”*, Asia CCS 2021

Minting / Burning

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1 function mint(address account, uint amount) public onlyOwner {  
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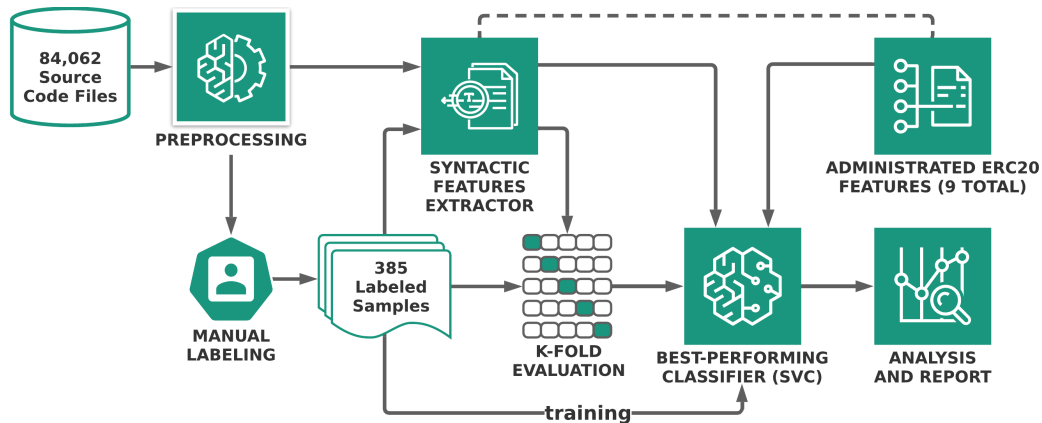

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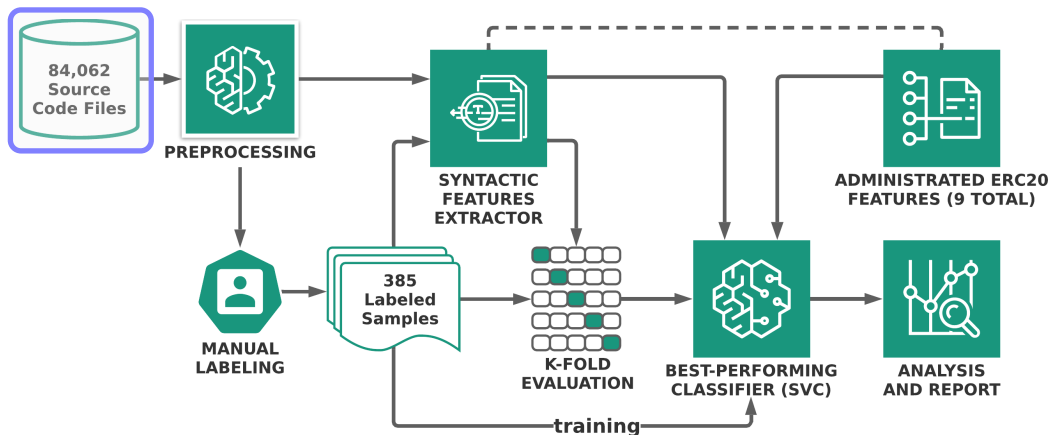
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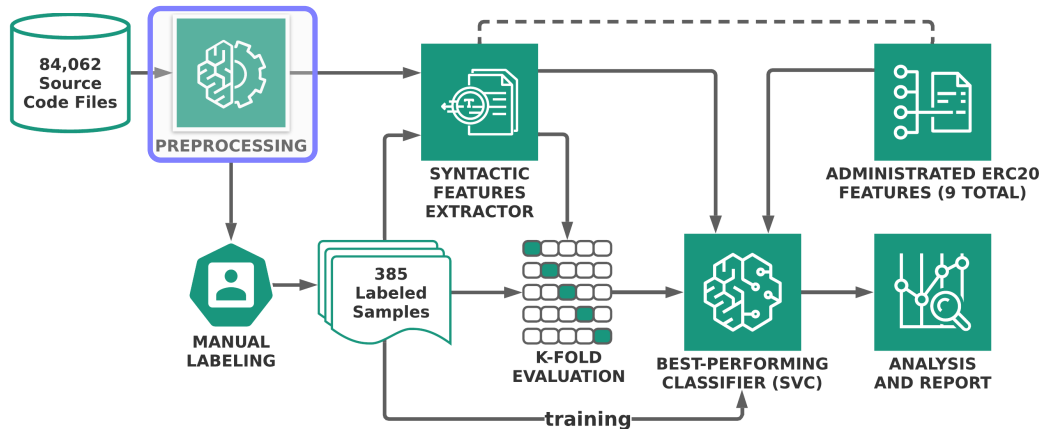
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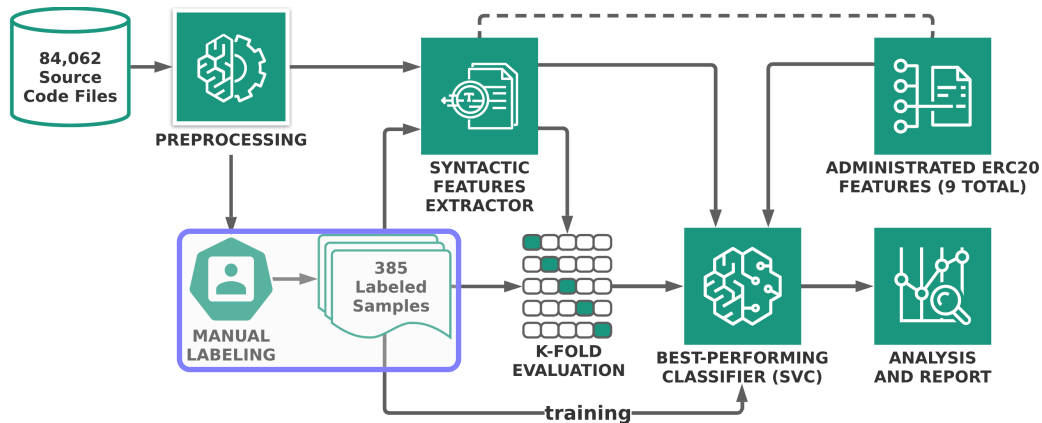
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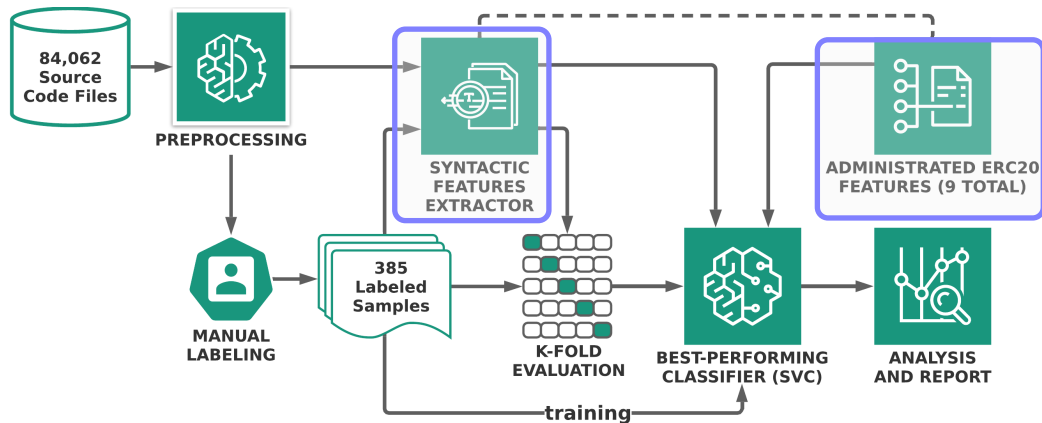
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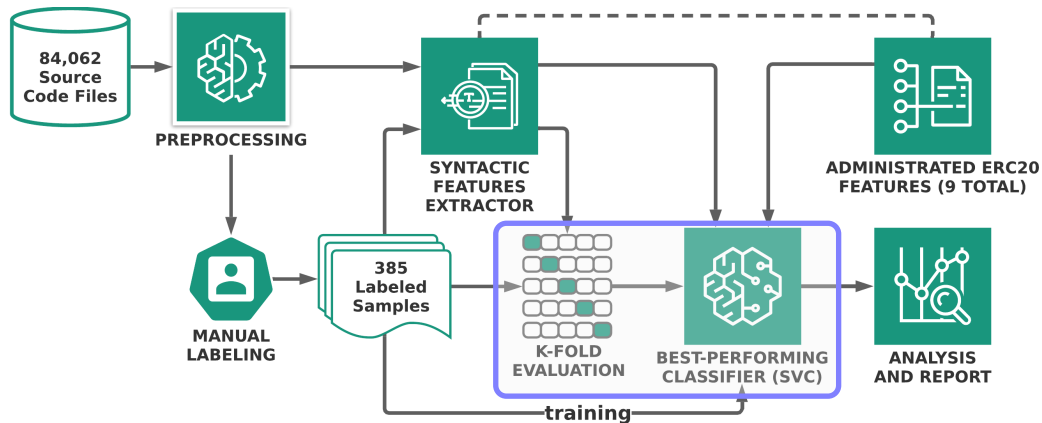
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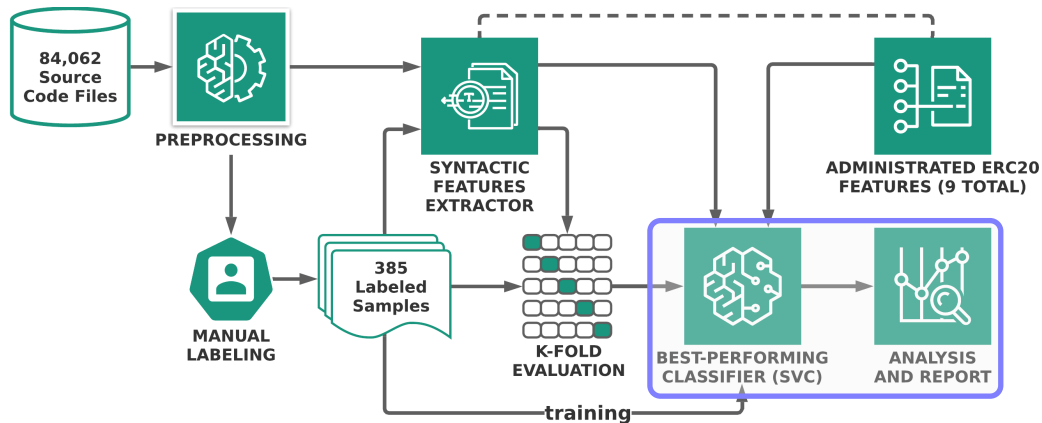
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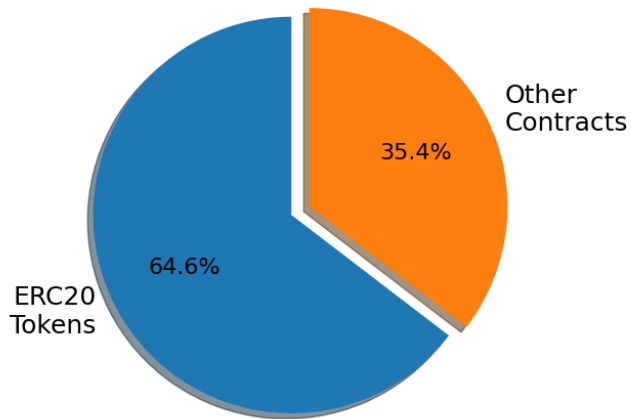
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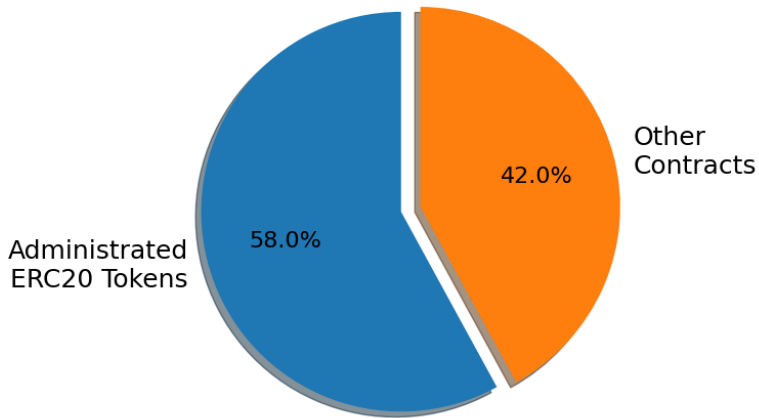
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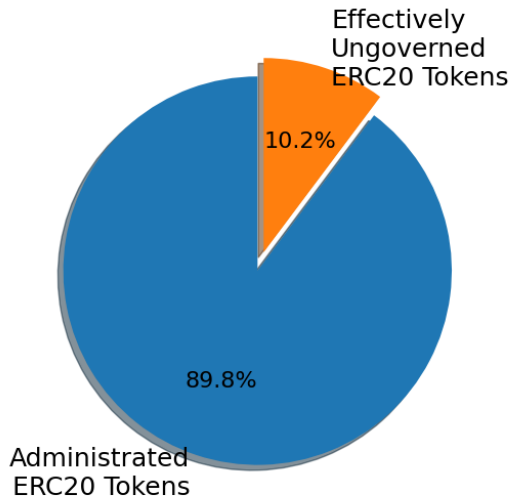
ERC20 Tokens vs Other Contracts



Percentage of Administrated ERC20 Tokens



Percentage of Administrated ERC20 Tokens — Cont'd



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Safe Pause

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- Announce maintenance procedure in advance;
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- If users disagree, they can safely quit the contract before the arrival of the maintenance timestamp.

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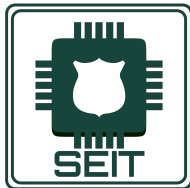
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