smart state

Web3 security easier than ever

Magic Square

# SQRpProRata
# Smart Contract Audit Interim Report

Ver. 2.1
July 22, 2024

smartstate.tech

# Table of Contents:

# Methodology

During the audit process we have analyzed various security aspects in line with our methodology, which includes:

- Manual code analysis
- Best code practices
- ERC20/BEP20 compliance (if applicable)
- Locked ether
- Pool Asset Security (backdoors in the underlying ERC-20)
- FA2 compliance (if applicable)
- Logical bugs & code logic issues
- Error handling issues
- General Denial Of Service(DOS)
- Cryptographic errors
- Weak PRNG issues
- Protocol and header parsing errors
- Private data leaks
- Using components with known vulnerabilities
- Unchecked call return method
- Code with no effects
- Unused vars
- Use of deprecated functions
- Authorization issues
- Reentrancy
- Arithmetic Overflows / Underflows
- Hidden Malicious Code
- External Contract Referencing
- Short Address/Parameter Attack
- Race Conditions / Front Running
- Uninitialized Storage Pointers
- Floating Points and Precision
- Signatures Replay

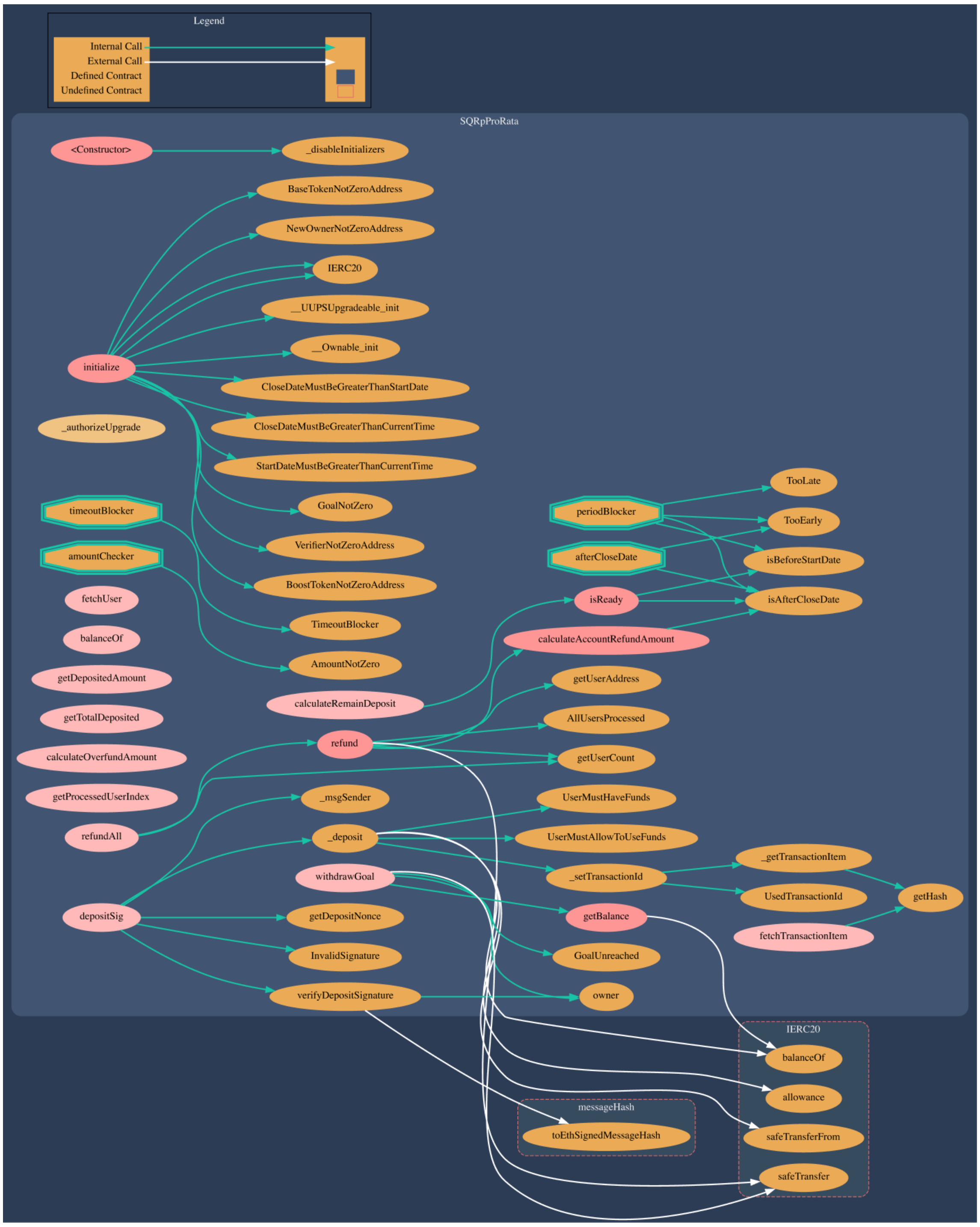
Vulnerabilities we have discovered are listed below.

## Vulnerabilities found:

| Severity | Amount |
|---|---|
| INFO | 0 |
| LOW | 0 |
| MEDIUM | 0 |
| HIGH | 2 |
| CRITICAL | 0 |
| TOTAL: | 2 |

# 1. SQRpProRata.sol

## 1.1 Contract structure



**Pic.1.1** SQRpProRata.sol structure

## 1.2 Contract methods analysis

| `constructor() returns()` |
|---|
| Vulnerabilities not detected |
| Math issues not detected |

| `initialize(SQRpProRata.ContractParams) returns()` |
|---|
| Vulnerabilities not detected |
| Math issues not detected |

| `_authorizeUpgrade(address) returns()` |
|---|
| Vulnerabilities not detected |
| Math issues not detected |

| `getContractName() returns(string)` |
|---|
| Vulnerabilities not detected |
| Math issues not detected |

| `getContractVersion() returns(string)` |
|---|
| Vulnerabilities not detected |
| Math issues not detected |

| `getBaseGoal() returns(uint256)` |
|---|
| Vulnerabilities not detected |
| Math issues not detected |

| `getStartDate() returns(uint32)` |
|---|
| Vulnerabilities not detected |
| Math issues not detected |

| `getCloseDate() returns(uint32)` |
|---|
| Vulnerabilities not detected |
| Math issues not detected |

| `getDepositRefundFetchReady() returns(bool)` |
|---|
| Vulnerabilities not detected |
| Math issues not detected |

| `getAccountCount() returns(uint32)` |
|---|
| Vulnerabilities not detected |
| Math issues not detected |

| `getAccountByIndex(uint32) returns(address)` |
|---|
| Vulnerabilities not detected |
| Math issues not detected |

| `getDepositRefundTokensInfo() returns(IDepositRefund.DepositRefundTokensInfo)` |
|---|
| Vulnerabilities not detected |
| Math issues not detected |

| `getDepositRefundAllocation(address) returns(uint256)` |
|---|
| Vulnerabilities not detected |
| Math issues not detected |

| `getDepositRefundAccountInfo(address) returns(IDepositRefund.DepositRefundAccountInfo)` |
|---|
| Vulnerabilities not detected |
| Math issues not detected |

| `getDepositRefundContractInfo() returns(IDepositRefund.DepositRefundContractInfo)` |
|---|
| Vulnerabilities not detected |
| Math issues not detected |

| `isBeforeStartDate() returns(bool)` |
|---|
| Vulnerabilities not detected |
| Math issues not detected |

| `isAfterCloseDate() returns(bool)` |
|---|
| Vulnerabilities not detected |
| Math issues not detected |

| `isDepositReady() returns(bool)` |
|---|
| Vulnerabilities not detected |
| Math issues not detected |

| `isReachedBaseGoal() returns(bool)` |
|---|
| Vulnerabilities not detected |
| Math issues not detected |

| `fetchAccountInfo(address) returns(SQRpProRata.AccountInfo)` |
|---|
| Vulnerabilities not detected |
| Math issues not detected |

| `getBaseBalance() returns(uint256)` |
|---|
| Vulnerabilities not detected |
| Math issues not detected |

| `getBoostBalance() returns(uint256)` |
|---|
| Vulnerabilities not detected |
| Math issues not detected |

| `balanceOf(address) returns(uint256,uint256)` |
|---|
| Vulnerabilities not detected |
| Math issues not detected |

| `getHash(string) returns(bytes32)` |
|---|
| Vulnerabilities not detected |
| Math issues not detected |

| `getAccountDepositNonce(address) returns(uint32)` |
|---|
| Vulnerabilities not detected |
| Math issues not detected |

| `calculateRemainDeposit() returns(uint256)` |
|---|
| Vulnerabilities not detected |
| Math issues not detected |

| `calculateAccidentAmount() returns(uint256)` |
|---|
| Vulnerabilities not detected |
| Math issues not detected |

| `calculateOverfundAmount() returns(uint256)` |
|---|
| Vulnerabilities not detected |
| Math issues not detected |

| `divisionRoundUp(uint256,uint256) returns(uint256)` |
|---|
| Vulnerabilities not detected |
| Math issues not detected |

| `calculateAccountBaseAllocation(address) returns(uint256)` |
|---|
| Vulnerabilities not detected |
| Math issues not detected |

| `calculateAccountBaseRefund(address) returns(uint256)` |
|---|
| Vulnerabilities not detected |
| Math issues not detected |

| `calculateAccountBoostRefund(address) returns(uint256)` |
|---|
| Vulnerabilities not detected |
| Math issues not detected |

| `calculateAccountBoostAverageExchangeRate(address) returns(uint256)` |
|---|
| Vulnerabilities not detected |
| Math issues not detected |

| `calculateAccountShare(address) returns(uint256)` |
|---|
| Vulnerabilities not detected |
| Math issues not detected |

| `fetchTransactionItem(string) returns(SQRpProRata.TransactionItem)` |
|---|
| Vulnerabilities not detected |
| Math issues not detected |

| `_getTransactionItem(string) returns(bytes32,SQRpProRata.TransactionItem)` |
|---|
| Vulnerabilities not detected |
| Math issues not detected |

| `getProcessedAccountIndex() returns(uint32)` |
|---|
| Vulnerabilities not detected |
| Math issues not detected |

| `calculatedTotalBoostRefundAmount() returns(uint256)` |
|---|
| Vulnerabilities not detected |
| Math issues not detected |

| `calculatedRequiredBoostAmount() returns(uint256)` |
|---|
| Vulnerabilities not detected |
| Math issues not detected |

| `calculateExcessBoostAmount() returns(uint256)` |
|---|
| Vulnerabilities not detected |
| Math issues not detected |

| `calculatedBaseSwappedAmount() returns(uint256)` |
|---|
| Vulnerabilities not detected |
| Math issues not detected |

| `calculateDecimalsFactors(uint8,uint8) returns(uint256,uint256)` |
|---|
| Vulnerabilities not detected |
| Math issues not detected |

| `calculateRemainProcessedAccountAmount() returns(uint256)` |
|---|
| Vulnerabilities not detected |
| Math issues not detected |

| `_setTransactionId(string,uint256) returns()` |
|---|
| Vulnerabilities not detected |
| Math issues not detected |

| `_deposit(address,uint256,bool,uint256,string,uint32) returns()` |
|---|
| Vulnerabilities not detected |
| Math issues not detected |

| `verifyDepositSignature(address,uint256,bool,uint256,uint32,string,uint32,bytes) returns(bool)` |
|---|
| Vulnerabilities not detected |
| Math issues not detected |

| `depositSig(SQRpProRata.DepositSigParams) returns()` | |
|---|---|
| Vulnerabilities not detected | |
| Math issues not detected | |
| TOKEN FLOW | Tokens In, public |

| `refund(uint32) returns()` | |
|---|---|
| Vulnerabilities not detected | |
| Math issues not detected | |
| TOKEN FLOW | Tokens Out, onlyOwner |

| `refundAll() returns()` | |
|---|---|
| Vulnerabilities not detected | |
| Math issues not detected | |
| TOKEN FLOW | Tokens Out, onlyOwner |

| `withdrawBaseGoal() returns()` | |
|---|---|
| Vulnerabilities not detected | |
| Math issues not detected | |
| TOKEN FLOW | Tokens Out, onlyOwner |

| | HIGH |
|---|---|
| `withdrawBaseSwappedAmount() returns()` | |
| In case there are many users, this function will run out of gas. Consider adding batch processing for this function. | |
| TOKEN FLOW | Tokens Out, onlyOwner |

| `withdrawExcessTokens() returns()` | |
|---|---|
| Vulnerabilities not detected | |
| Math issues not detected | |
| TOKEN FLOW | Tokens Out, onlyOwner |

| | HIGH |
|---|---|
| `forceWithdraw(address,address,uint256) returns()` | |
| Centralization risks. Owner can sweep any token from the contract. | |
| TOKEN FLOW | Tokens Out, onlyOwner |

## Verification checksums

| Contract name | Bytecode hash(SHA-256) |
|---|---|
| SQRpProRata.sol | 76a341d9fb0093294282378a86a04cab696d7d f9eb0bf6456894bdd0f7af3ef6 |