

TechRate  
April, 2022



# SMART CONTRACTS SECURITY AUDIT REPORT



Techrate\_audits



Techrate



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# Audit Details



Audited project

**aalto**



Deployer address

**Not deployed**



Client contacts:

**aalto team**



Blockchain

**Not provided**



Project website:

**Not provided**

# Disclaimer

This is a limited report on our findings based on our analysis, in accordance with good industry practice as at the date of this report, in relation to cybersecurity vulnerabilities and issues in the framework and algorithms based on smart contracts, the details of which are set out in this report. In order to get a full view of our analysis, it is crucial for you to read the full report. While we have done our best in conducting our analysis and producing this report, it is important to note that you should not rely on this report and cannot claim against us on the basis of what it says or doesn't say, or how we produced it, and it is important for you to conduct your own independent investigations before making any decisions. We go into more detail on this in the below disclaimer below – please make sure to read it in full.

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The analysis of the security is purely based on the smart contracts alone. No applications or operations were reviewed for security. No product code has been reviewed.

# Background

**TechRate was commissioned by aalto to perform an audit of smart contracts on commit:**

<https://github.com/OxBriz/aalto/commit/b414d858705f7ae58190e321b69c3d30452acc7f>

The purpose of the audit was to achieve the following:

- Ensure that the smart contract functions as intended.
- Identify potential security issues with the smart contract.

The information in this report should be used to understand the risk exposure of the smart contract, and as a guide to improve the security posture of the smart contract by remediating the issues that were identified.

# Issues Checking Status

Issue description	Checking status
1. <b>Compiler errors.</b>	Passed
2. <b>Race conditions and Reentrancy. Cross-function race conditions.</b>	Passed
3. <b>Possible delays in data delivery.</b>	Passed
4. <b>Oracle calls.</b>	Passed
5. <b>Front running.</b>	Passed
6. <b>Timestamp dependence.</b>	Passed
7. <b>Integer Overflow and Underflow.</b>	Passed
8. <b>DoS with Revert.</b>	Passed
9. <b>DoS with block gas limit.</b>	Low issues
10. <b>Methods execution permissions.</b>	Passed
11. <b>Economy model of the contract.</b>	Passed
12. <b>The impact of the exchange rate on the logic.</b>	Passed
13. <b>Private user data leaks.</b>	Passed
14. <b>Malicious Event log.</b>	Passed
15. <b>Scoping and Declarations.</b>	Passed
16. <b>Uninitialized storage pointers.</b>	Passed
17. <b>Arithmetic accuracy.</b>	Low issues
18. <b>Design Logic.</b>	Passed
19. <b>Cross-function race conditions.</b>	Passed
20. <b>Safe Open Zeppelin contracts implementation and usage.</b>	Passed
21. <b>Fallback function security.</b>	Passed

# Security Issues

## ✓ High Severity Issues

No high severity issues found.

## ✓ Medium Severity Issues

No medium severity issues found.

## ✓ Low Severity Issues

### 1. Out of gas

#### Issue:

- The function `setAutomatedMarketMakerPair()`, `getLiquidityBacking()`, `manualSyncPairs()` uses the loop to iterate through `_markerPairs` array. Function will be aborted with `OUT_OF_GAS` exception if there will be a long addresses list.

#### Recommendation:

Check that the arrays' lengths is not too big.

### 2. Rounding error

#### Issue:

- At `gonSwapThreshold` value calculation division goes first. In Solidity we don't have floating points, but instead we get rounding errors.

#### Recommendation:

Do division after multiplication.

## Notes:

- `(amountToNftHolders > 0 && nftFeeReceiver != address(0))` checking is unnecessary.

## Owner privileges (In the period when the owner is not renounced)

- Owner can change staking address.
- Owner can enable staking.
- Owner can enable/disable initialDistributionFinished.
- Owner can change targetLiquidity and targetLiquidityDenominator.
- Owner can change gonSwapThreshold and enable/disable swap.
- Owner can change nftContractAddress address.
- Owner can withdraw contract native tokens.
- Owner can withdraw ERC20 tokens.
- Owner can enable/disable auto rebase.
- Owner can change rebaseFrequencySeconds.
- Owner can change rewardYield and rewardYieldDenominator values.
- Owner can enable/disable isLiquidityInNative.
- Owner can change nextRebase time.
- Owner can change maxSellTransactionAmount.
- Owner can add isCorePair addresses.
- Owner can manually rebase.
- Owner can multiple transfer tokens from owner to users from list (test).
- Owner can add addresses in blacklist, samaritans and isFeeExempt arrays.
- Owner can enable/disable feesOnNormalTransfers.
- Owner can change fee receivers addresses.
- Owner can change fees.
- Owner can enable/disable nftFeeDiscountEnabled.
- Owner can change nftFeeDiscount and nftFeeDiscountDenominator (2 methods).
- Owner can enable/disable samaritanFeeDiscountEnabled.

# Conclusion

Smart contracts contain low severity issues! Liquidity pair contract's security is not checked due to out of scope. The further transfers and operations with the funds raise are not related to this particular contract.

Liquidity locking details are NOT provided by the team.

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## *TechRate note:*

*Please check the disclaimer above and note, the audit makes no statements or warranties on business model, investment attractiveness or code sustainability. The report is provided for the only contract mentioned in the report and does not include any other potential contracts deployed by Owner.*