HACKEN

SMART CONTRACT CODE REVIEW AND SECURITY ANALYSIS REPORT

Customer: LeagueDAO
Date: February 21st, 2022

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Document

Name	Smart Contract Code Review and Security Analysis Report for League DAO.
Approved by	Andrew Matiukhin | CTO Hacken OU
Type	ERC20 token;Transfer controller
Platform	Ethereum / Solidity
Methods	Architecture Review, Functional Testing, Computer-Aided Verification, Manual Review
Repository	https://github.com/LeagueDAO/nomo-strategyV2
Commit	2a7eee6c203f9a27f8ed9d5c1a24beed46a8d36e - Initial Audit 832998cd48e7d4e866884b4ae701a791817a0407 - Second Review
Technical Documentation	No
JS tests	Yes
Website	https://leaguedao.com
Timeline	07 FEBRUARY 2022 - 21 FEBRUARY 2021
Changelog	11 FEBRUARY 2022 - Initial Audit 21 FEBRUARY 2022 - Second Review

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Introduction

Hacken OÜ (Consultant) was contracted by LeagueDAO (Customer) to conduct a Smart Contract Code Review and Security Analysis. This report presents the findings of the security assessment of the Customer's smart contract and its code review conducted between February 07th, 2022 - February 11th, 2022.

The second review was conducted on February 21st, 2022.

Scope

The scope of the project is smart contracts in the repository:

Repository:
https://github.com/LeagueDAO/nomo-strategyV2
Commit: 2a7eee6c203f9a27f8ed9d5c1a24beed46a8d36e - Initial Audit
832998cd48e7d4e866884b4ae701a791817a0407 - Second Review
Technical Documentation: No
JS tests: Yes
Contracts:
NomoStragtegyV2.sol
NomoVault.sol

We have scanned this smart contract for commonly known and more specific vulnerabilities. Here are some of the commonly known vulnerabilities that are considered:

Category	Check Item
Code review	▪ Reentrancy ▪ Ownership Takeover ▪ Timestamp Dependence ▪ Gas Limit and Loops ▪ DoS with (Unexpected) Throw ▪ DoS with Block Gas Limit ▪ Transaction-Ordering Dependence ▪ Style guide violation ▪ Costly Loop ▪ ERC20 API violation ▪ Unchecked external call ▪ Unchecked math ▪ Unsafe type inference ▪ Implicit visibility level ▪ Deployment Consistency ▪ Repository Consistency ▪ Data Consistency

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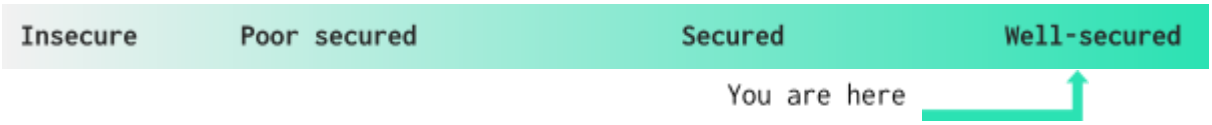
Functional review	▪ Business Logics Review ▪ Functionality Checks ▪ Access Control & Authorization ▪ Escrow manipulation ▪ Token Supply manipulation ▪ Assets integrity ▪ User Balances manipulation ▪ Data Consistency manipulation ▪ Kill-Switch Mechanism ▪ Operation Trails & Event Generation

Executive Summary

According to the assessment, the Customer's smart contracts are well-secured.



Our team performed an analysis of code functionality, manual audit, and automated checks with Mythx and Slither. All issues found during automated analysis were manually reviewed, and important vulnerabilities are presented in the Audit overview section. All found issues can be found in the Audit overview section.

As a result of the audit, security engineers found **6** low severity issues.

As a result of the remediations review, Customers' smart contracts contain **1** low severity issue.

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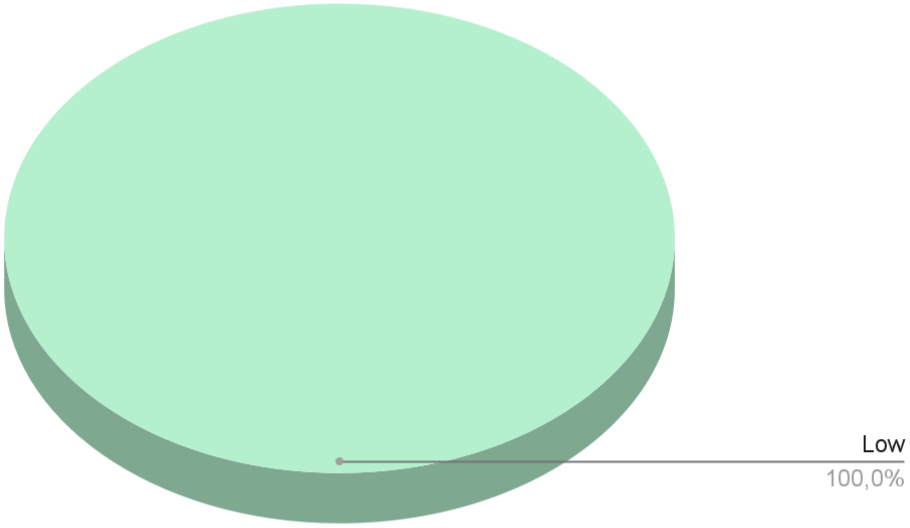
Graph 1. The distribution of vulnerabilities after the audit.



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Severity Definitions

Risk Level	Description
Critical	Critical vulnerabilities are usually straightforward to exploit and can lead to asset loss or data manipulations.
High	High-level vulnerabilities are difficult to exploit; however, they also have a significant impact on smart contract execution, e.g., public access to crucial functions
Medium	Medium-level vulnerabilities are important to fix; however, they can't lead to asset loss or data manipulations.
Low	Low-level vulnerabilities are mostly related to outdated, unused, etc. code snippets that can't have a significant impact on execution

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Audit overview

Critical

No critical issues detected

High

No critical issues detected

Medium

No medium issues detected

Low

1. Missing Zero Address Validation.

The *initialize* function takes addresses as inputs but never checks if they are zero addresses.

Contracts:NomoStrategyV2.sol

Function: initialize()

Recommendation: Implement zero address checks.

Status: Fixed

2. Redundant Require Statement

Require statement in the distributeReward function is redundant, since this statement cannot be met due to the loop conditions its in.

Contracts: NomoVault.sol

Functions: distributeReward(address leagues)

Recommendation: Remove this statement.

Status: Reported

3. Use of Hardcoded Values

getReward function uses hardcoded value 20 in division

Contracts: NomostrategyV2.sol

Functions: getReward()

Recommendation: Move hardcoded values to constants.

Status: Fixed

4. Floating Pragma

NomoVault.sol uses floating pragma ^0.8.9.

Contracts: NomoVault.sol

Functions: -

Recommendation: Consider locking the pragma version whenever possible and avoid using a floating pragma in the final deployment.

Status: Fixed

5. Functions that can be Declared as *external*

In order to save Gas, public functions that are never called in the contract should be declared as *external*.

Contracts:NomoStragetyV2.sol

Functions: initialize()

Recommendation: Consider locking the pragma version whenever possible and avoid using a floating pragma in the final deployment.

Status: Fixed

Conclusion

Smart contracts within the scope were manually reviewed and analyzed with static analysis tools.

The audit report contains all found security vulnerabilities and other issues in the reviewed code.

As a result of the audit, security engineers found **6** low severity issues.

As a result of the remediations review, Customers' smart contracts contain **1** low severity issue.

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Disclaimers

Hacken Disclaimer

The smart contracts given for audit have been analyzed in accordance with the best industry practices at the date of this report, in relation to cybersecurity vulnerabilities and issues in smart contract source code, the details of which are disclosed in this report (Source Code); the Source Code compilation, deployment, and functionality (performing the intended functions).

The audit makes no statements or warranties on the security of the code. It also cannot be considered as a sufficient assessment regarding the utility and safety of the code, bug-free status, or any other statements of the contract. While we have done our best in conducting the analysis and producing this report, it is important to note that you should not rely on this report only — we recommend proceeding with several independent audits and a public bug bounty program to ensure the security of smart contracts.

Technical Disclaimer

Smart contracts are deployed and executed on a blockchain platform. The platform, its programming language, and other software related to the smart contract can have vulnerabilities that can lead to hacks. Thus, the audit can't guarantee the explicit security of the audited smart contracts.