InterFi NETWORK

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SMART CONTRACT SECURITY AUDIT OF

TG DAO 3.0

SMART CONTRACT AUDIT | SOLIDITY DEVELOPMENT & TESTING | KYC | PROJECT EVALUATION

RELENTLESSLY SECURING THE PUBLIC BLOCKCHAIN

Summary

Auditing Firm	InterFi Network
Client Firm	TG DAO 3.0
Architecture	InterFi "Echelon" Auditing Standard
Language	Solidity
Mandatory Audit Check	Static, Software, Auto Intelligent & Manual Analysis
Final Report Date	January 11, 2022

Audit Summary

InterFi team has performed a line-by-line manual analysis and automated review of the smart contracts. The smart contracts were analyzed mainly for common smart contract vulnerabilities, exploits, and manipulation hacks. According to the smart contract audit:

- TG DAO 3.0's smart contract source codes have **LOW RISK SEVERITY**
- TG DAO 3.0's smart contracts have an **ACTIVE OWNERSHIP**
- Important owner privileges: **PAUSE CONTRACTS, WITHDRAW, BURN, ANTI-SNIPE**

For the detailed understanding of risk severity, source code vulnerability, and functional test, kindly refer to the audit.

🚨 Token Contract address: **0x46F275321107d7c49cF80216371AbF1a1599c36F**

🚨 Crowd Sale Contract address: **0xD076366c8DbCfaba1E8F672D66234CD060A5fC71**

🚨 Vesting Contract address: **0x4D1CeBBDb249576988f915D4a528630240ac6906**

⛓️ Blockchain: **Binance Smart Chain**

✅ Verify the authenticity of this report on InterFi's GitHub: **https://github.com/interfinetwork**

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Project Overview

InterFi was consulted by TG DAO 3.0 to conduct the smart contract security audit of their solidity source codes.

About TG DAO 3.0

TG DAO 3.0 is a launchpad governed as a DAO. We work both with blockchain and tokenized conventional startups, have an integrated social network for investors and tools to create community investment pools.

Project	TG DAO 3.0
Blockchain	Binance Smart Chain
Language	Solidity
Token Contract	0x46F275321107d7c49cF80216371AbF1a1599c36F
Crowd Sale Contract	0xD076366c8DbCfaba1E8F672D66234CD060A5fC71
Vesting Contract	0x4D1CeBBDb249576988f915D4a528630240ac6906
Website	https://tgdao.io/
Telegram	https://t.me/TGDAOgroup
Twitter	https://twitter.com/tgdaopad
Pitch Deck	https://images.tgdao.io/pitch-deck.pdf
White Paper	https://images.tgdao.io/white-paper.pdf

Project Logo

Token Source Code On Blockchain (Verified Contract Source Code)

https://bscscan.com/address/0x46F275321107d7c49cF80216371AbF1a1599c36F#code

Contract Name: TGDAOToken

Compiler Version: v0.8.0

Optimization Enabled: Yes with 200 runs

Crowd Sale Source Code On Blockchain (Verified Contract Source Code)

https://bscscan.com/address/0xD076366c8DbCfaba1E8F672D66234CD060A5fC71#code

Contract Name: CrowdSale

Compiler Version: v0.8.0

Optimization Enabled: Yes with 200 runs

Vesting Source Code On Blockchain (Verified Contract Source Code)

https://bscscan.com/address/0x4D1CeBBDb249576988f915D4a528630240ac6906#code

Contract Name: VestingWallet

Compiler Version: v0.8.0

Optimization Enabled: Yes with 200 runs

SHA-1 Hash

Token source code is audited at hash #57e300ddc9d0d8c993839c3c4da13c606bd98675

Crowd Sale source code is audited at hash #be22e3ebe65a072d9f68977eeea091fa8e416f1f

Vesting source code is audited at hash #4ecd334915edc1e5ad665bb67e7bac88b9dd8840

Audit Scope & Methodology

The scope of this report is to audit the smart contract source code of TG DAO 3.0. InterFi has scanned the contract and reviewed the project for common vulnerabilities, exploits, hacks, and back-doors. Below is the list of commonly known smart contract vulnerabilities, exploits, and hacks:

Category	
Smart Contract Vulnerabilities	❖ Re-entrancy ❖ Unhandled Exceptions ❖ Transaction Order Dependency ❖ Integer Overflow ❖ Unrestricted Action ❖ Incorrect Inheritance Order ❖ Typographical Errors ❖ Requirement Violation
Source Code Review	❖ Ownership Takeover ❖ Gas Limit and Loops ❖ Deployment Consistency ❖ Repository Consistency ❖ Data Consistency ❖ Token Supply Manipulation
Functional Assessment	❖ Access Control and Authorization ❖ Operations Trail and Event Generation ❖ Assets Manipulation ❖ Liquidity Access

InterFi's Echelon Audit Standard

The aim of InterFi's "Echelon" standard is to analyze the smart contract and identify the vulnerabilities and the hacks in the smart contract. Mentioned are the steps used by ECHELON-1 to assess the smart contract:

1. Solidity smart contract source code reviewal:
   - ❖ Review of the specifications, sources, and instructions provided to InterFi to make sure we understand the size, scope, and functionality of the smart contract.
   - ❖ Manual review of code, which is the process of reading source code line-byline to identify potential vulnerabilities.
2. Static, Manual, and Software analysis:
   - ❖ Test coverage analysis, which is the process of determining whether the test cases are covering the code and how much code is exercised when we run those test cases.
   - ❖ Symbolic execution, which is analysing a program to determine what inputs causes each part of a program to execute.
3. Best practices review, which is a review of the smart contracts to improve efficiency, effectiveness, clarify, maintainability, security, and control based on the established industry and academic practices, recommendations, and research.
4. Specific, itemized, actionable recommendations to help you take steps to secure your smart contracts

Automated 3P frameworks used to assess the smart contract vulnerabilities

- ❖ Slither
- ❖ Consensys MythX, Mythril
- ❖ SWC Registry
- ❖ Solidity Coverage
- ❖ Open Zeppelin Code Analyzer
- ❖ Solidity Code Complier

InterFi's Risk Classification

Smart contracts are generally designed to manipulate and hold funds denominated in ETH/BNB. This makes them very tempting attack targets, as a successful attack may allow the attacker to directly steal funds from the contract. Below are the typical risk levels of a smart contract:

Vulnerable: A contract is vulnerable if it has been flagged by a static analysis tool as such. As we will see later, this means that some contracts may be vulnerable because of a false-positive.

Exploitable: A contract is exploitable if it is vulnerable and the vulnerability could be exploited by an external attacker. For example, if the "vulnerability" flagged by a tool is in a function which requires to own the contract, it would be vulnerable but not exploitable.

Exploited: A contract is exploited if it received a transaction on the main network which triggered one of its vulnerabilities. Therefore, a contract can be vulnerable or even exploitable without having been exploited.

Risk severity	Meaning
! Critical	This level vulnerabilities could be exploited easily, and can lead to asset loss, data loss, asset, or data manipulation. They should be fixed right away.
! High	This level vulnerabilities are hard to exploit but very important to fix, they carry an elevated risk of smart contract manipulation, which can lead to high-risk severity
! Medium	This level vulnerabilities should be fixed, as they carry an inherent risk of future exploits, and hacks which may or may not impact the smart contract execution.
! Low	This level vulnerabilities can be ignored. They are code style violations, and informational statements in the code. They may not affect the smart contract execution

Smart Contract – Static Analysis

Symbol	Meaning
🛑	Function can be modified
💵	Function is payable
🔒	Function is locked
🔐	Function can be accessed
!	Important functionality

Token Contract

TGDAOToken | Implementation | ERC20, ERC20Burnable, RecoverableFunds, WithCallback |||
└	<Constructor>	Public !	💵	ERC20
└	_burn	Internal 🔒	🛑	
└	_transfer	Internal 🔒	🛑	
└	_beforeTokenTransfer	Internal 🔒	🛑	
└	setAntisnipeDisable	External !	🛑	onlyOwner
└	setLiquidityRestrictorDisable	External !	🛑	onlyOwner
└	setAntisnipeAddress	External !	🛑	onlyOwner
└	setLiquidityRestrictionAddress	External !	🛑	onlyOwner
ILiquidityRestrictor	Interface			
└	assureByAgent	External !	🛑	NO!
└	assureLiquidityRestrictions	External !	🛑	NO!
ICallbackContract	Interface			
└	burnCallback	External !	🛑	NO!
└	transferCallback	External !	🛑	NO!
IAntisnipe	Interface			
└	assureCanTransfer	External !	🛑	NO!
WithCallback	Implementation	Ownable		
└	registerCallback	Public !	🛑	onlyOwner
└	unregisterCallback	Public !	🛑	onlyOwner
└	_burnCallback	Internal 🔒	🛑	
└	_transferCallback	Internal 🔒	🛑	
RecoverableFunds	Implementation	Ownable		
└	retrieveTokens	Public !	🛑	onlyOwner

└	retriveETH	Public ❗	🛑	onlyOwner
Context	Implementation		
└	_msgSender	Internal 🔒		
└	_msgData	Internal 🔒		
IERC20Metadata	Interface	IERC20	
└	name	External ❗		NO❗
└	symbol	External ❗		NO❗
└	decimals	External ❗		NO❗
ERC20Burnable	Implementation	Context, ERC20	
└	burn	Public ❗	🛑	NO❗
└	burnFrom	Public ❗	🛑	NO❗
IERC20	Interface		
└	totalSupply	External ❗		NO❗
└	balanceOf	External ❗		NO❗
└	transfer	External ❗	🛑	NO❗
└	allowance	External ❗		NO❗
└	approve	External ❗	🛑	NO❗
└	transferFrom	External ❗	🛑	NO❗
ERC20	Implementation	Context, IERC20, IERC20Metadata	
└	<Constructor>	Public ❗	🛑	NO❗
└	name	Public ❗		NO❗
└	symbol	Public ❗		NO❗
└	decimals	Public ❗		NO❗
└	totalSupply	Public ❗		NO❗
└	balanceOf	Public ❗		NO❗
└	transfer	Public ❗	🛑	NO❗
└	allowance	Public ❗		NO❗
└	approve	Public ❗	🛑	NO❗
└	transferFrom	Public ❗	🛑	NO❗
└	increaseAllowance	Public ❗	🛑	NO❗
└	decreaseAllowance	Public ❗	🛑	NO❗
└	_transfer	Internal 🔒	🛑	
└	_mint	Internal 🔒	🛑	
└	_burn	Internal 🔒	🛑	
└	_approve	Internal 🔒	🛑	
└	_beforeTokenTransfer	Internal 🔒	🛑	
└	_afterTokenTransfer	Internal 🔒	🛑	
Pausable	Implementation	Context	
└	<Constructor>	Public ❗	🛑	NO❗
└	paused	Public ❗		NO❗
└	_pause	Internal 🔒	🛑	whenNotPaused
└	_unpause	Internal 🔒	🛑	whenPaused
Ownable	Implementation	Context	

└	<Constructor>	Public ❗	🛑	NO❗
└	owner	Public ❗		NO❗
└	renounceOwnership	Public ❗	🛑	onlyOwner
└	transferOwnership	Public ❗	🛑	onlyOwner
└	_setOwner	Private 🔐	🛑	

Crowd Sale Contract

CrowdSale	Implementation	Pausable, RecoverableFunds		
└	pause	Public ❗	🛑	onlyOwner
└	unpause	Public ❗	🛑	onlyOwner
└	setToken	Public ❗	🛑	onlyOwner
└	setVestingWallet	Public ❗	🛑	onlyOwner
└	setPercentRate	Public ❗	🛑	onlyOwner
└	setFundraisingWallet	Public ❗	🛑	onlyOwner
└	setPrice	Public ❗	🛑	onlyOwner
└	setStage	Public ❗	🛑	onlyOwner
└	removeStage	Public ❗	🛑	onlyOwner
└	getStage	Public ❗		NO❗
└	getActiveStageIndex	Public ❗		NO❗
└	calculateInvestmentAmounts	Internal 🔒		
└	<Receive Ether>	External ❗	💸	whenNotPaused
IVestingWallet	Interface			
└	deposit	External ❗	🛑	NO❗
└	deposit	External ❗	🛑	NO❗
Stages	Library			
└	set	Internal 🔒	🛑	
└	remove	Internal 🔒	🛑	
└	contains	Internal 🔒		
└	length	Internal 🔒		
└	at	Internal 🔒		
└	get	Internal 🔒		
RecoverableFunds	Implementation	Ownable		
└	retrieveTokens	Public ❗	🛑	onlyOwner
└	retriveETH	Public ❗	🛑	onlyOwner
EnumerableSet	Library			
└	_add	Private 🔐	🛑	
└	_remove	Private 🔐	🛑	
└	_contains	Private 🔐		
└	_length	Private 🔐		
└	_at	Private 🔐		
└	_values	Private 🔐		
└	add	Internal 🔒	🛑	
└	remove	Internal 🔒	🛑	

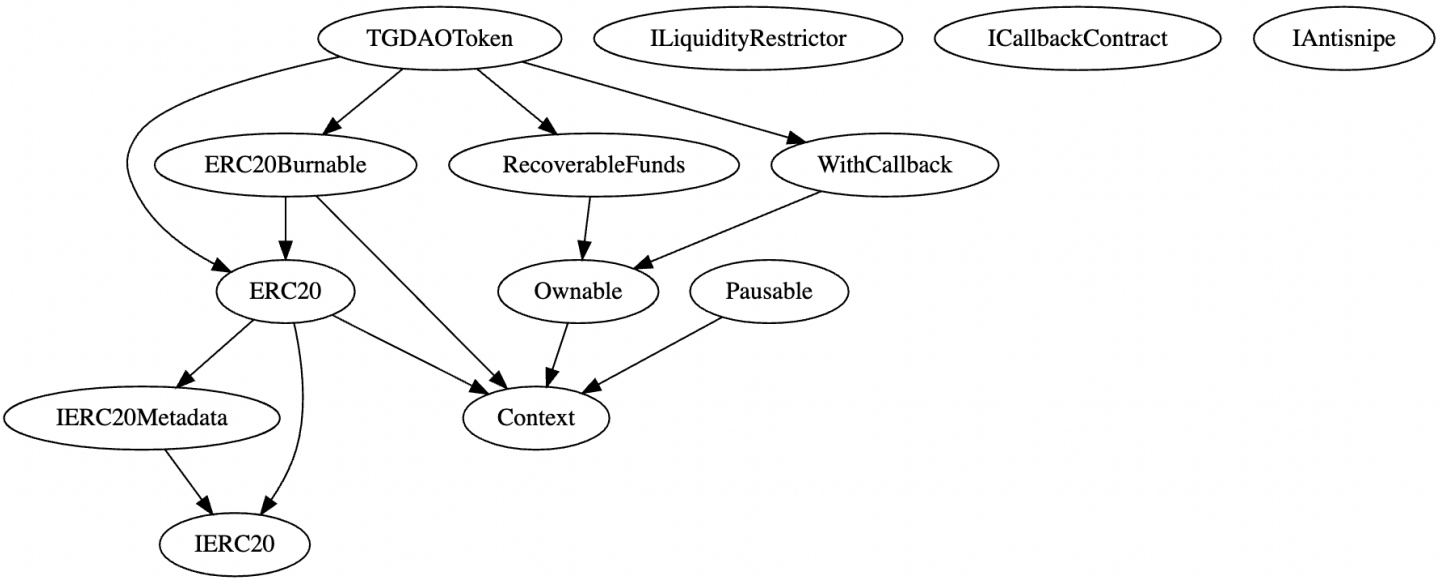
└	contains	Internal 🔒		
└	length	Internal 🔒		
└	at	Internal 🔒		
└	values	Internal 🔒		
└	add	Internal 🔒	🛑	
└	remove	Internal 🔒	🛑	
└	contains	Internal 🔒		
└	length	Internal 🔒		
└	at	Internal 🔒		
└	values	Internal 🔒		
└	add	Internal 🔒	🛑	
└	remove	Internal 🔒	🛑	
└	contains	Internal 🔒		
└	length	Internal 🔒		
└	at	Internal 🔒		
└	values	Internal 🔒		

Vesting Contract

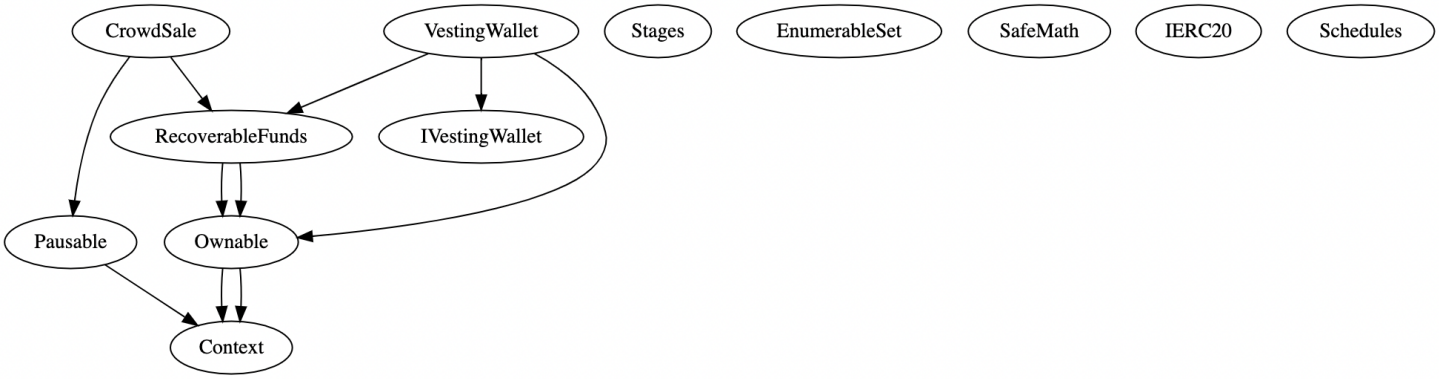
VestingWallet	Implementation	IVestingWallet, Ownable, RecoverableFunds		
└	setToken	Public ❗	🛑	onlyOwner
└	setVestingSchedule	Public ❗	🛑	onlyOwner
└	removeVestingSchedule	Public ❗	🛑	onlyOwner
└	getVestingSchedule	Public ❗		NO❗
└	setBalance	Public ❗	🛑	onlyOwner
└	deposit	Public ❗	🛑	NO❗
└	deposit	Public ❗	🛑	NO❗
└	_deposit	Internal 🔒	🛑	
└	getAccountInfo	Public ❗		NO❗
└	withdraw	Public ❗	🛑	NO❗
└	_calculateVestedAmount	Internal 🔒		
IVestingWallet	Interface			
└	deposit	External ❗	🛑	NO❗
└	deposit	External ❗	🛑	NO❗
Schedules	Library			
└	set	Internal 🔒	🛑	
└	remove	Internal 🔒	🛑	
└	contains	Internal 🔒		
└	length	Internal 🔒		
└	at	Internal 🔒		
└	get	Internal 🔒		

Smart Contract – Inheritance Graph

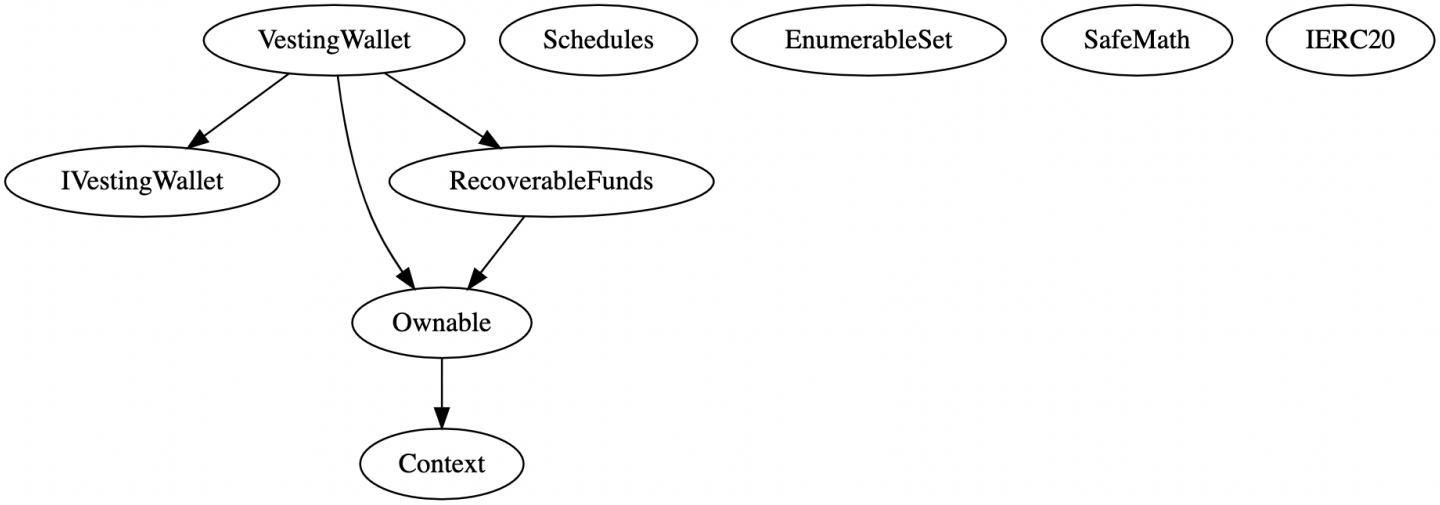
Token Contract



Crowd Sale Contract



Vesting Contract



Smart Contract – Manual Analysis

Function	Description	Tested	Verdict
Total Supply	provides information about the total token supply	Yes	**Passed**
Balance Of	provides account balance of the owner's account	Yes	**Passed**
Transfer	executes transfers of a specified number of tokens to a specified address	Yes	**Passed**
Approve	allow a spender to withdraw a set number of tokens from a specified account	Yes	**Passed**
Allowance	returns a set number of tokens from a spender to the owner	Yes	**Passed**
Buy Back	is an action in which the project buys back its tokens from the existing holders usually at a market price	NA	NA
Burn	executes transfers of a specified number of tokens to a burn address	Yes	**Passed**
Pause	stops or locks all function modules of the smart contract	Yes	**! Medium**
Anti Snipe	prevents bots from making transaction at “addLiquidity” block	Yes	**Passed**
Transfer Ownership	executes transfer of contract ownership to a specified wallet	Yes	**Passed**
Renounce Ownership	executes transfer of contract ownership to a dead address	Yes	**Passed**

Best Practices ✅

- Owner cannot mint tokens after initial contract creation/deployment.
- The smart contract utilizes "SafeMath" function to avoid common smart contract vulnerabilities.

```
string private _name = "TGDAOToken";
library SafeMath {
function add(uint256 a, uint256 b) internal pure returns (uint256) {
    uint256 c = a + b;
    require(c >= a, "SafeMath: addition overflow");

function sub(uint256 a, uint256 b) internal pure returns (uint256) {
    return sub(a, b, "SafeMath: subtraction overflow");

    uint256 c = a * b;
    require(c / a == b, "SafeMath: multiplication overflow");

    return c;

function div(uint256 a, uint256 b) internal pure returns (uint256) {
    return div(a, b, "SafeMath: division by zero");

function mod(uint256 a, uint256 b) internal pure returns (uint256) {
    return mod(a, b, "SafeMath: modulo by zero");
```


Note ⚠️

- Active smart contract owner: 0x6e9dc3d20b906fd2b52ec685fe127170ed2165ab
- All three smart contracts TGDAOToken.sol, CrowdSale.sol, VestingWallet.sol are owned by the same address.
- ***Be aware that active smart contract owner privileges constitute an elevated impact to smart contract's safety and security.***
- Smart contract owner can ***pause or un pause*** the smart contract function modules. All three contracts are ***pausable***.
- VestingWallet.sol smart contract owner can ***withdraw tokens***, this function module can be used to withdraw funds from the smart contract.

- TGDAOToken.sol smart contract owner can ***burn*** tokens from the total supply.
- TGDAOToken.sol utilizes ***anti-snipe*** function module to prevent bots from making transaction at “addLiquidity” block.
- VestingWallet.sol contract **does not utilize** “ReentrancyGuard” to prevent reentrant calls to a function. Reentrancy Guard is a contract module that helps prevent reentrant calls to a function. Inheriting from Reentrancy Guard will make the nonReentrant modifier available, which can be applied to functions to make sure there are no nested (reentrant) calls to them.
- TGDAOToken.sol smart contract has ***low severity issue*** which may or may not create any functional vulnerability.

{

"resource": " /TGDAOToken.sol",

"owner": "_generated_diagnostic_collection_name_#0",

"severity": 8, (! Low Severity)

"Expected identifier, got 'LParen”,

"source": "solc",

}

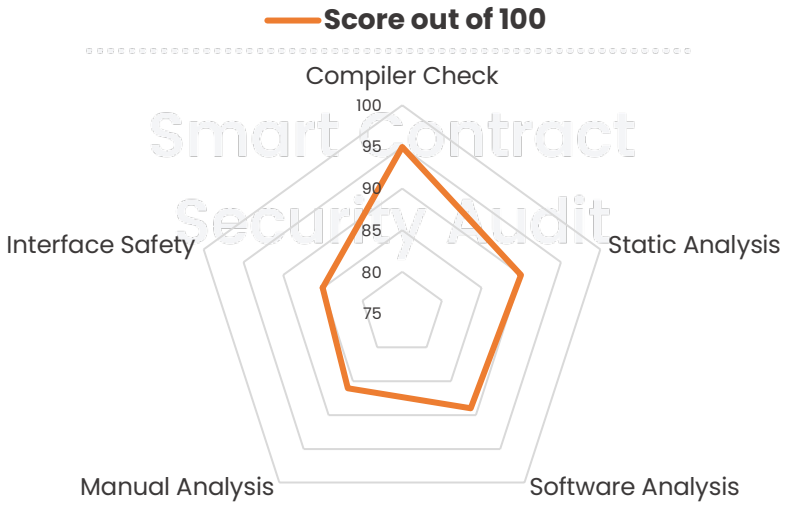
Smart Contract – SWC Attacks

SWC ID	Description	Verdict
SWC-101	Integer Overflow and Underflow	**Passed**
SWC-102	Outdated Compiler Version	**! Low**
SWC-103	Floating Pragma	**Passed**
SWC-104	Unchecked Call Return Value	**Passed**
SWC-105	Unprotected Ether Withdrawal	**Passed**
SWC-106	Unprotected SELFDESTRUCT Instruction	**Passed**
SWC-107	Re-entrancy	**Passed**
SWC-108	State Variable Default Visibility	**Passed**
SWC-109	Uninitialized Storage Pointer	**Passed**
SWC-110	Assert Violation	**Passed**
SWC-111	Use of Deprecated Solidity Functions	**Passed**
SWC-112	Delegate Call to Untrusted Callee	**Passed**
SWC-113	DoS with Failed Call	**Passed**
SWC-114	Transaction Order Dependence	**Passed**
SWC-115	Authorization through tx.origin	**Passed**
SWC-116	Block values as a proxy for time	**Passed**
SWC-117	Signature Malleability	**Passed**
SWC-118	Incorrect Constructor Name	**Passed**

SWC-119	Shadowing State Variables	**Passed**
SWC-120	Weak Sources of Randomness from Chain Attributes	**Passed**
SWC-121	Missing Protection against Signature Replay Attacks	**Passed**
SWC-122	Lack of Proper Signature Verification	**Passed**
SWC-123	Requirement Violation	**Passed**
SWC-124	Write to Arbitrary Storage Location	**Passed**
SWC-125	Incorrect Inheritance Order	**Passed**
SWC-126	Insufficient Gas Griefing	**Passed**
SWC-127	Arbitrary Jump with Function Type Variable	**Passed**
SWC-128	DoS With Block Gas Limit	**Passed**
SWC-129	Typographical Error	**Passed**
SWC-130	Right-To-Left-Override control character (U+202E)	**Passed**
SWC-131	Presence of unused variables	**Passed**
SWC-132	Unexpected Ether balance	**Passed**
SWC-133	Hash Collisions With Multiple Variable Length Arguments	**Passed**
SWC-134	Message call with hardcoded gas amount	**Passed**
SWC-135	Code With No Effects (Irrelevant/Dead Code)	**! Low**
SWC-136	Unencrypted Private Data On-Chain	**Passed**

Smart Contract - Risk Status & Radar Chart

Risk Severity	Status
! Critical	None critical severity issues identified
! High	None high severity issues identified
! Medium	1 medium severity issues identified
! Low	4 low severity issues identified
Verified	54 functions and instances verified and checked



Auditor's Verdict

InterFi team has performed a line-by-line manual analysis and automated review of the smart contract. The smart contract was analyzed mainly for common smart contract vulnerabilities, exploits, and manipulation hacks.

- TG DAO 3.0's smart contract source codes have **LOW RISK SEVERITY**
- TG DAO 3.0's smart contracts have an **ACTIVE OWNERSHIP**
- Important owner privileges: **PAUSE CONTRACTS, WITHDRAW, BURN, ANTI-SNIPE**

Note for stakeholders

- Be aware that active smart contract owner privileges constitute an elevated impact on smart contract's safety and security.
- Make sure that the project team's KYC/identity is verified by an independent firm, e.g., InterFi.
- Always check if the contract's liquidity is locked. A longer liquidity lock plays an important role in project's longevity. It is recommended to have multiple liquidity providers.
- Examine the unlocked token supply in the owner, developer, or team's private wallets. Understand the project's tokenomics, and make sure the tokens outside of the LP Pair are vested or locked for a longer period of time.
- Ensure that the project's official website is hosted on a trusted platform, and is using an active SSL certificate. The website's domain should be registered for a longer period of time.

Important Disclaimer

InterFi Network provides contract auditing and project verification services for blockchain projects. The purpose of the audit is to analyse the on-chain smart contract source code, and to provide basic overview of the project. **This report should not be transmitted, disclosed, referred to, or relied upon by any person for any purposes without InterFi's prior written consent.**

InterFi provides the easy-to-understand assessment of the project, and the smart contract (otherwise known as the source code). The audit makes no statements or warranties on the security of the code. It also cannot be considered as an enough assessment regarding the utility and safety of the code, bug-free status, or any other statements of the contract. While we have used all the data at our disposal to provide the transparent analysis, 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. **Be aware that smart contracts deployed on a blockchain aren't resistant from external vulnerability, or a hack. Be aware that active smart contract owner privileges constitute an elevated impact to smart contract's safety and security. Therefore, InterFi does not guarantee the explicit security of the audited smart contract.**

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.

This report should not be considered as an endorsement or disapproval of any project or team. The information provided on this report does not constitute investment advice, financial advice, trading advice, or any other sort of advice and you should not treat any of the report's content as such. Do conduct your own due diligence and consult your financial advisor before making any investment decisions.

About InterFi Network

InterFi Network provides intelligent blockchain solutions. InterFi is developing an ecosystem that is seamless and responsive. Some of our services: Blockchain Security, Token Launchpad, NFT Marketplace, etc. **InterFi's mission is to interconnect multiple services like Blockchain Security, DeFi, Gaming, and Marketplace under one ecosystem that is seamless, multi-chain compatible, scalable, secure, fast, responsive, and easy-to-use.**

InterFi is built by a decentralized team of UI experts, contributors, engineers, and enthusiasts from all over the world. Our team currently consists of 6+ core team members, and 10+ casual contributors. **InterFi provides manual, static, and automatic smart contract analysis, to ensure that project is checked against known attacks and potential vulnerabilities.**

To learn more, visit **https://interfi.network**

To view our audit portfolio, visit **https://github.com/interfinetwork**

To book an audit, message **https://t.me/interfiaudits**

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