

# SMART CONTRACT AUDIT

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PREPARED FOR

DROPS UNICRYPT MARKETPLACE CONTRACT



## **INTRODUCTION**

Auditing Firm	InterFi Network
Client Firm	Drops
Methodology	Automated Analysis, Manual Code Review
Language	Solidity
Contract	0x76389Ea0Ce243b3404f692De4856A40C0BcB31A7
Blockchain	Ethereum Chain
Centralization	Active ownership
Commit F AUDIT REPORT CONFI	985b9e8681a1b6dc96d9122052c1fdf6924e7d12 INTERF INTERF
Website	https://drops.site/
Telegram	https://t.me/DropsERC/
X (Twitter)	https://twitter.com/DropsERC/
Report Date	March 13, 2024

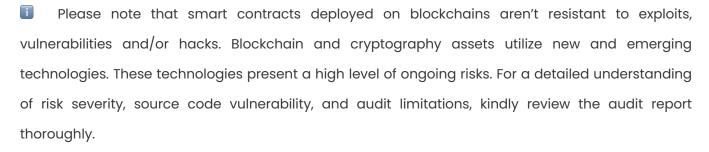
I Verify the authenticity of this report on our website: <a href="https://www.github.com/interfinetwork">https://www.github.com/interfinetwork</a>



## **EXECUTIVE SUMMARY**

InterFi has performed the automated and manual analysis of solidity codes. Solidity codes were reviewed for common contract vulnerabilities and centralized exploits. Here's a quick audit summary:

Status	Critical	Major 🔵	Medium 🛑	Minor	Unknown
Open	0	0	0	1	1
Acknowledged	0	1	2	0	1
Resolved	0	0	1	7	0
Important Privileges	Set ETH Fee, Set Drops Token, Set Fee Wallet, Set Locker Address, Verify Listing, Redact Listing,				
Important Functions	Buy Lock With ETH, Buy Lock With Drops, Initiate Listing, Activate Listing, Withdraw Listing, Change Price In ETH, Change Price In Drops				



Please note that centralization privileges regardless of their inherited risk status - constitute an elevated impact on smart contract safety and security.



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## **SCOPE OF WORK**

InterFi was consulted by Drops to conduct the smart contract audit of their solidity source codes. The audit scope of work is strictly limited to mentioned solidity file(s) only:

- DropsUnicryptMarketplace.sol
- If source codes are not deployed on the main net, they can be modified or altered before mainnet deployment. Verify the contract's deployment status below:

Public Contract Link		
https://etherscan.io/address/0x76389ea0ce243b3404f692de4856a40c0bcb31a7#code		
Contract Name TERF	DropsUnicryptMarketplace INTERF INTERF	
Compiler Version	0.8.24	
License	MIT	



## **AUDIT METHODOLOGY**

Smart contract audits are conducted using a set of standards and procedures. Mutual collaboration is essential to performing an effective smart contract audit. Here's a brief overview of InterFi's auditing process and methodology:

#### CONNECT

 The onboarding team gathers source codes, and specifications to make sure we understand the size, and scope of the smart contract audit.

#### **AUDIT**

- Automated analysis is performed to identify common contract vulnerabilities. We may use the following third-party frameworks and dependencies to perform the automated analysis:
  - Remix IDE Developer Tool
  - Open Zeppelin Code Analyzer
  - SWC Vulnerabilities Registry
  - DEX Dependencies, e.g., Pancakeswap, Uniswap
- Simulations are performed to identify centralized exploits causing contract and/or trade locks.
- A manual line-by-line analysis is performed to identify contract issues and centralized privileges.
   We may inspect below mentioned common contract vulnerabilities, and centralized exploits:

	o Token Supply Manipulation
	o Access Control and Authorization
	o Assets Manipulation
Controlizad Evalaita	o Ownership Control
Centralized Exploits	o Liquidity Access
	<ul> <li>Stop and Pause Trading</li> </ul>
	<ul> <li>Ownable Library Verification</li> </ul>



	0	Integer Overflow
	0	Lack of Arbitrary limits
	0	Incorrect Inheritance Order
	0	Typographical Errors
	0	Requirement Violation
	0	Gas Optimization
	0	Coding Style Violations
Common Contract Vulnerabilities	0	Re-entrancy
	0	Third-Party Dependencies
	0	Potential Sandwich Attacks
	0	Irrelevant Codes
	0	Divide before multiply
	FI INT	Conformance to Solidity Naming Guides  Compiler Specific Warnings
	0	Language Specific Warnings

#### **REPORT**

- o The auditing team provides a preliminary report specifying all the checks which have been performed and the findings thereof.
- o The client's development team reviews the report and makes amendments to solidity codes.
- o The auditing team provides the final comprehensive report with open and unresolved issues.

#### **PUBLISH**

- o The client may use the audit report internally or disclose it publicly.
- It is important to note that there is no pass or fail in the audit, it is recommended to view the audit as an unbiased assessment of the safety of solidity codes.



## **RISK CATEGORIES**

Smart contracts are generally designed to hold, approve, and transfer tokens. This makes them very tempting attack targets. A successful external attack may allow the external attacker to directly exploit. A successful centralization-related exploit may allow the privileged role to directly exploit. All risks which are identified in the audit report are categorized here for the reader to review:

Risk Type	Definition
Critical •	These risks could be exploited easily and can lead to asset loss, data loss, asset, or data manipulation. They should be fixed right away.
Major	These risks 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   INTERE II  AUDIT REPORT CO	These risks 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-risk reentrancy-related vulnerabilities should be fixed to deter exploits.  These risks do not pose a considerable risk to the contract or those who interact with it. They are code-style violations and deviations from standard practices. They should be highlighted and fixed nonetheless.
Unknown	These risks pose uncertain severity to the contract or those who interact with it. They should be fixed immediately to mitigate the risk uncertainty.

All statuses which are identified in the audit report are categorized here for the reader to review:

Status Type	Definition
Open	Risks are open.
Acknowledged	Risks are acknowledged, but not fixed.
Resolved	Risks are acknowledged and fixed.



## **CENTRALIZED PRIVILEGES**

Centralization risk is the most common cause of cryptography asset loss. When a smart contract has a privileged role, the risk related to centralization is elevated.

There are some well-intended reasons have privileged roles, such as:

- o Privileged roles can be granted the power to pause() the contract in case of an external attack.
- Privileged roles can use functions like, include(), and exclude() to add or remove wallets from fees, swap checks, and transaction limits. This is useful to run a presale and to list on an exchange.

Authorizing privileged roles to externally-owned-account (EOA) is dangerous. Lately, centralization-related losses are increasing in frequency and magnitude.

- o The client can lower centralization-related risks by implementing below mentioned practices:
- o Privileged role's private key must be carefully secured to avoid any potential hack.
- Privileged role should be shared by multi-signature (multi-sig) wallets.
- Authorized privilege can be locked in a contract, user voting, or community DAO can be introduced to unlock the privilege.
- o Renouncing the contract ownership, and privileged roles.
- Remove functions with elevated centralization risk.
- Understand the project's initial asset distribution. Assets in the liquidity pair should be locked.

  Assets outside the liquidity pair should be locked with a release schedule.



## **AUTOMATED ANALYSIS**

Symbol	Definition
	Function modifies state
es a	Function is payable
	Function is internal
	Function is private
Ţ	Function is important

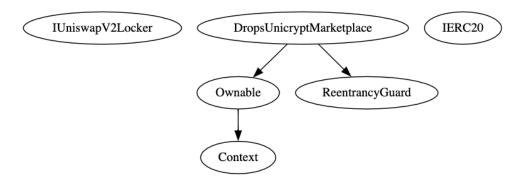
```
| **IUniswapV2Locker** | Interface | |||
| L | getUserLockForTokenAtIndex | External ! | NO! |
| L | tokenLocks | External ! | NO! |
| transferLockOwnership | External ! | • | NO! |
| July | getUserNumLocksForToken | External Complete | NO! | AUDIT REPORT CONFIDENTIA
| **DropsUnicryptMarketplace** | Implementation | Ownable, ReentrancyGuard |||
| └ | <Constructor> | Public ! | ● | Ownable |
| L | setETHFee | External ! | ● | onlyOwner |
| └ | setDropsToken | External ! | ● | onlyOwner |
| └ | setFeeWallet | External ! | ● | onlyOwner |
| └ | setLockerAddress | External ! | ● | onlyOwner |
| L | initiateListing | External ! | • | NO! |
| L | activateListing | External ! | P | NO! |
| L | fetchListing | External ! | NO! |
| L | buyLockWithETH | External ! | 🐸 | nonReentrant |
| L | buyLockWithDrops | External ! | 🐸 | nonReentrant |
| L | getIndex | External ! | NO! |
```



```
| L | withdrawListing | External ! | Government | |
| L | verifyListing | External ! | 🔴 | onlyOwner |
| └ | changePriceInETH | External ! | ● | nonReentrant |
| └ | changePriceInDrops | External ! | ● | nonReentrant |
| └ | redactListing | External ! | ● | onlyOwner |
| **Context** | Implementation | |||
| └ | _msgData | Internal 🔒 | | |
111111
| **IERC20** | Interface | |||
| L | totalSupply | External ! | NO! |
| L | balanceOf | External ! | NO! |
| L | transfer | External ! | 🛑 |NO! |
| <sup>L</sup> | allowance | External ! | |NO! |
| L | approve | External ! | ONFORMAL
| L | transferFrom | External ! | 🔴 |NO! |
\Pi\Pi\Pi\Pi
| **Ownable** | Implementation | Context |||
| L | <Constructor> | Public ! | • | NO! |
| L | owner | Public ! | NO! |
| L | _checkOwner | Internal 🗎 | | |
| └ | renounceOwnership | Public ! | ● | onlyOwner |
| L | transferOwnership | Public ! | Public ! | onlyOwner |
| └ | _transferOwnership | Internal 🗎 | 🔴 | |
111111
| **ReentrancyGuard** | Implementation | |||
| L | <Constructor> | Public ! | 🔎 |NO! |
| └ | _nonReentrantBefore | Private 🔐 | 🛑 | |
| └ | _nonReentrantAfter | Private 🔐 | 🛑 | |
```



## **INHERITANCE GRAPH**







## **MANUAL REVIEW**

Identifier	Definition	Severity
CEN-01	Centralized privileges	Major 🛑

Important only0wner centralized privileges are listed below:

setETHFee()
setDropsToken()
setFeeWallet()
setLockerAddress()
verifyListing()
redactListing()
renounceOwnership()
transferOwnership()





#### **RECOMMENDATION**

Deployers, contract owners, operators', access controlled, and all other privileged roles' private-keys/access-keys/admin-keys should be secured carefully. These entities can have a single point of failure that compromises the security of the project.

<u>Implement multi-signature wallets:</u> Require multiple signatures from different parties to execute certain sensitive functions within contracts. This spreads control and reduces the risk of a single party having complete authority.

<u>Use a decentralized governance model:</u> Implement a governance model that enables token holders or other stakeholders to participate in decision-making processes. This can include voting on contract upgrades, parameter changes, or any other critical decisions that impact the contract's functioning.



#### **ACKNOWLEDGEMENT**

Drops team argued that centralized privileged are required by the design. Drops team will implement multi-signature wallet approach whenever possible.





Identifier	Definition	Severity
LOG-02	Potential front-running	Medium 🔵

Potential front-running happens when an attacker can manipulate the exchange rate by front-running a transaction to purchase assets and make profits by back-running a transaction to sell assets.

Front-running risk in withdrawListing() involves an attacker seeing a withdrawal transaction pending and trying to buy the lock before the withdrawal is processed, especially if lock is underpriced.

Actions like listing activations and purchases may also be susceptible to front-running, where a malicious actor observes an upcoming transaction and tries to get their own transaction mined first by paying a higher gas fee.

Mentioned functions are vulnerable to front running:

initiateListing()

activateListing()

buyLockWithETH()

buyLockWithDrops()

withdrawListing()

changePriceInETH()

changePriceInDrops()

#### **RECOMMENDATION**

Use mechanisms like commit-reveal schemes to mitigate front-running risk in sensitive functions.

#### **ACKNOWLEDGEMENT**

Drops team has recognized this finding, and argued that front-running is an inherent issue on Ethereum, due to public nature of pending transactions. While we strive to mitigate its impact through careful design, complete prevention within the current Ethereum framework is not feasible.



Identifier	Definition
LOG-03	Re-entrancy

Below mentioned functions are used with nonReentrant modifier to lower re-entrancy risks:

buyLockWithETH()
buyLockWithDrops()
withdrawListing()
changePriceInETH()
changePriceInDrops()





Identifier	Definition	Severity
LOG-04	Inadequate access control	Medium

Below mentioned functions should be provided adequate access control to stop unauthorized state changes:

activateListing()
initiateListing()
withdrawListing()

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#### **RECOMMENDATION**

Implement adequate role-based access control (RBAC) to mentioned functions.

#### **RESOLUTION**

Drops team argued that above mentioned functions check for appropriate owner of the lock in function bodies. Explicit access control is not required.



Identifier	Definition	Severity
COD-02	Timestamp manipulation via block.timestamp	Minor •

Be aware that the timestamp of the block can be manipulated by a miner. When the contract uses the timestamp to seed a random number, the miner can actually post a timestamp within 15 seconds of the block being validated, effectively allowing the miner to precompute an option more favorable to their chances.

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#### **RECOMMENDATION**

To maintain block integrity, follow 15 seconds rule, and scale time dependent events accordingly.



Identifier	Definition	Severity
COD-04	Missing or inaccurate error messages	Minor •

Below mentioned functions have missing or inaccurate error messages:

setDropsToken()
setLockerAddress()

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#### **RECOMMENDATION**

Provide accurate information strings for require related errors.

#### **RESOLUTION**

Drops team has added error messages for require statements.



Identifier	Definition	Severity
COD-05	Missing zero address validation	Minor •

Below mentioned functions are missing zero address input validation:

setDropsToken()
setFeeWallet()
setLockerAddress()

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#### **RECOMMENDATION**

Validate if the modified address is dead(0) or not.

#### **RESOLUTION**

Drops team has added dead(0) address validation in mentioned functions.



Identifier	Definition	Severity
COD-06	Unchecked return values	Minor •

transferFrom call in buyLockWithDrops() does not explicitly check the return value.

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#### **RECOMMENDATION**

Ensure that token transfer calls return a boolean success value.

#### **RESOLUTION**

Drops team commented that Solidity 0.8.0 will revert on failure due to require statement, hence explicit return value check isn't necessary.



Identifier	Definition	Severity
COD-07	Division before multiplication	Minor •

Division before multiplication may throw unexpected results in feeForReferral:

uint256 feeForReferral = feeAmount \* referralBonus / ethFee;

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#### **RECOMMENDATION**

Adjust formula to perform multiplication before division.

#### **RESOLUTION**

Drops team has adjusted formula to perform multiplication before division.



Identifier	Definition	Severity
COD-10	Direct and indirect dependencies	Unknown •
COD-11	Reliance on OpenZeppelin libraries	

Smart contract is interacting with third party protocols e.g., DEX Routers, Drops Token Contract, External Contracts, Web 3 Applications, *OpenZeppelin* tools. The scope of the audit treats these entities as black boxes and assumes their functional correctness. However, in the real world, all of them can be compromised, and exploited. Moreover, upgrades in these entities can create severe impacts, e.g., increased transactional fees, deprecation of previous routers, etc.

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#### **RECOMMENDATION**

Inspect third party dependencies regularly, and mitigate severe impacts whenever necessary.

#### **ACKNOWLEDGEMENT**

Drops team will inspect third party dependencies regularly, and push updates as required.



Identifier	Definition	Severity
COD-12	Lack of event-driven architecture	Minor •

Smart contract uses function calls to update state, which can make it difficult to track and analyze changes to the contract over time.

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#### **RECOMMENDATION**

Use events to track state changes. Events improve transparency and provide a more granular view of contract activity.

#### **RESOLUTION**

Drops team has added events to track and analyze changes to the contract over time.



Identifier	Definition	Severity
COD-13	Consider pull over push for payments	Minor •

Current implementation pushes payments to sellers and fee wallet. This pattern is susceptible to reentrancy and can fail if the receiving contract does not accept ETH. A better alternative is the pull pattern, where recipients withdraw their funds.

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#### **RECOMMENDATION**

Use pull pattern to allow recipients to withdraw their funds.

#### **RESOLUTION**

Drops team commented that smart contract now employs ReentrancyGuard, hence, direct vulnerability to re-entrancy attacks is mitigated, addressing the primary concern with push pattern.



Identifier	Definition	Severity
COD-14	Impact of price volatility in <b>Drops</b> token	Unknown

Smart contract allows listings to be priced in both ETH and the Drops token.

Price manipulation risk is higher in **Drops** token, as its value could be more volatile compared to ETH.

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#### **RECOMMENDATION**

Ensure timely updates of prices in response to market movements to maintain trust and prevent exploitation.



Identifier	Definition	Severity
COD-15	Changing price of listings	Medium

Allowing sellers to change the price of their listings with changePriceInETH() and changePriceInDrops() introduces flexibility. This flexibility introduces mentioned risk:

Sellers may frequently change prices in response to market fluctuations or to manipulate perceived value, which may lead to instability or unfair practices.

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#### **RECOMMENDATION**

Implement cooldown period between price changes can help mitigate rapid price manipulation.

#### **ACKNOWLEDGEMENT**

Drops team has recognized this finding, and kept the code as-is. No changes to original source code have been made.



Identifier	Definition	Severity
COM-01	Floating compiler status	Minor •

Compiler is set to ^0.8.0.





#### **RECOMMENDATION**

Pragma should be fixed to the version that you're indenting to deploy your contracts with.

#### **RESOLUTION**

Drops team has deployed smart contract with stable compiler.



## **DISCLAIMERS**

InterFi Network provides the easy-to-understand audit of solidity source codes (commonly known as smart contracts).

The smart contract for this particular audit was analyzed for common contract vulnerabilities, and centralization exploits. This audit report makes no statements or warranties on the security of the code. This audit report does not provide any warranty or guarantee regarding the absolute bug-free nature of the smart contract analyzed, nor do they provide any indication of the client's business, business model or legal compliance. This audit report does not extend to the compiler layer, any other areas beyond the programming language, or other programming aspects that could present security risks. Cryptographic tokens are emergent technologies, they carry high levels of technical risks and uncertainty. You agree that your access and/or use, including but not limited to any services, reports, and materials, will be at your sole risk on an as-is, where-is, and as-available basis. This audit report could include false positives, false negatives, and other unpredictable results.

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## **ABOUT INTERFI NETWORK**

InterFi Network provides intelligent blockchain solutions. We provide solidity development, testing, and auditing services. We have developed 150+ solidity codes, audited 1000+ smart contracts, and analyzed 500,000+ code lines. We have worked on major public blockchains e.g., Ethereum, Binance, Cronos, Doge, Polygon, Avalanche, Metis, Fantom, Bitcoin Cash, Velas, Oasis, etc.

InterFi Network is built by engineers, developers, UI experts, and blockchain enthusiasts. Our team currently consists of 4 core members, and 6+ casual contributors.

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Telegram (Engineering): https://t.me/interfigudits

Telegram (Onboarding): https://t.me/interfisupport









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