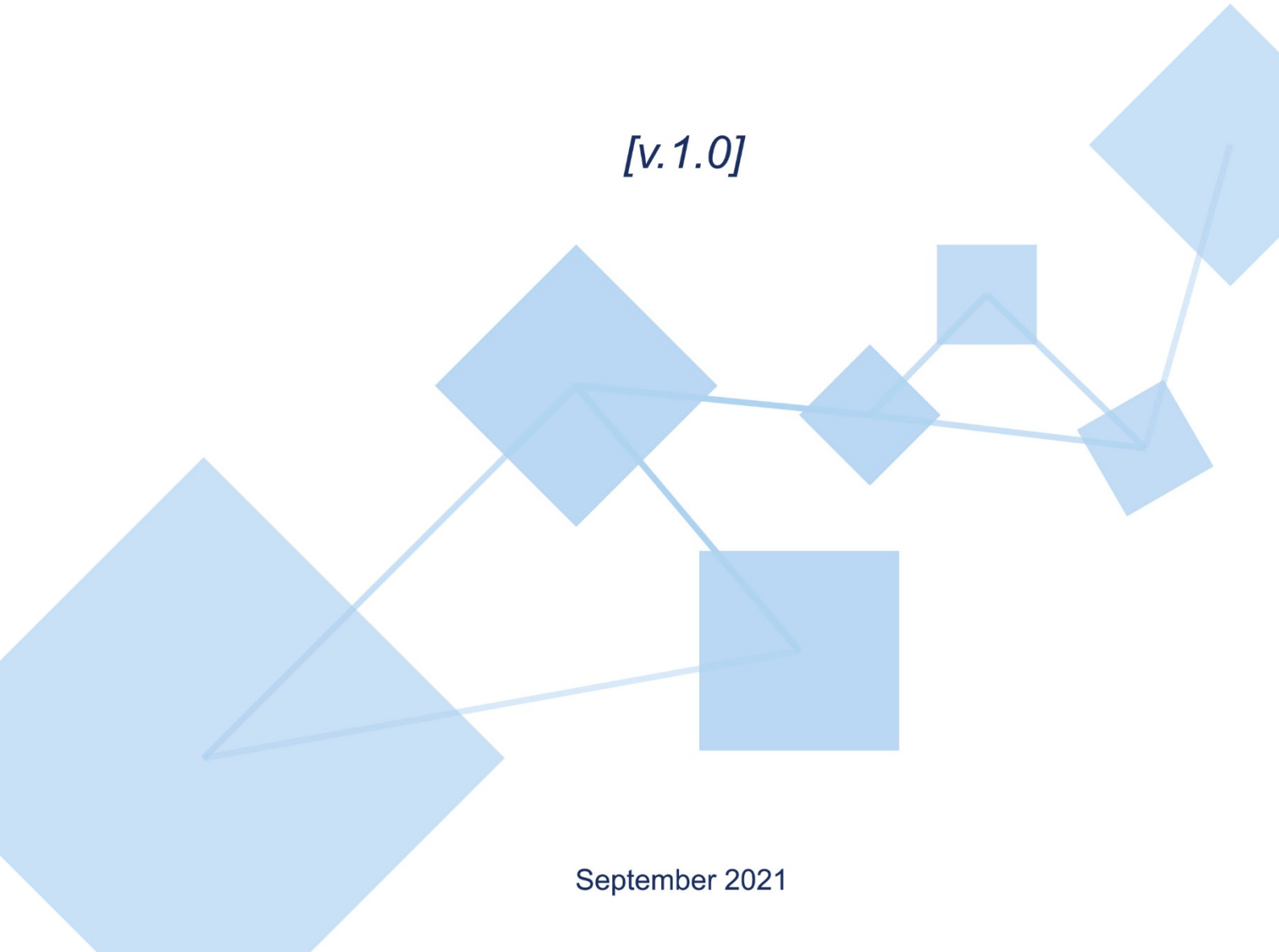
CheckPoint

# Token Security Audit Report
# Prepared for PomeranianPuppy

*[v.1.0]*



September 2021

# Document Properties

| | |
|---|---|
| Client | PomeranianPuppy |
| Platform | Binance Smart Chain |
| Language | Solidity |
| Codebase | 0xB0ADbEe9c16F4ef27aE53686De3290C720c34e48 |

# Audit Summary

| | |
|---|---|
| Delivery Date | 07.09.2021 |
| Audit Methodology | Static Analysis, Manual Review |
| Auditor(s) | Erno Patiala |
| Classification | Publlic |
| Version | 1.0 |

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*Remark: For more information about this document and its contents, please contact CheckPoint team*

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# 1 Executive Summary

On 07/09/2021, CheckPoint conducted a full audit for the PomeranianPuppy to verify the overall security posture including a smart contract review to discover issues and vulnerabilities in the source code. Static Code Analysis, Dynamic Analysis, and Manual Review werdone in conjunction to identify smart contract vulnerabilities together with technical & business logic flaws that may be exposed to the potential risk of the platform and the ecosystem.

After further analysis and internal discussion, we determined a few issues of varying severities that need to be brought up and paid more attention to. More information can be found in **Section 5 'Audit Result'**. Practical recommendations are provided according to each vulnerability found and should be followed to remediate the issue.



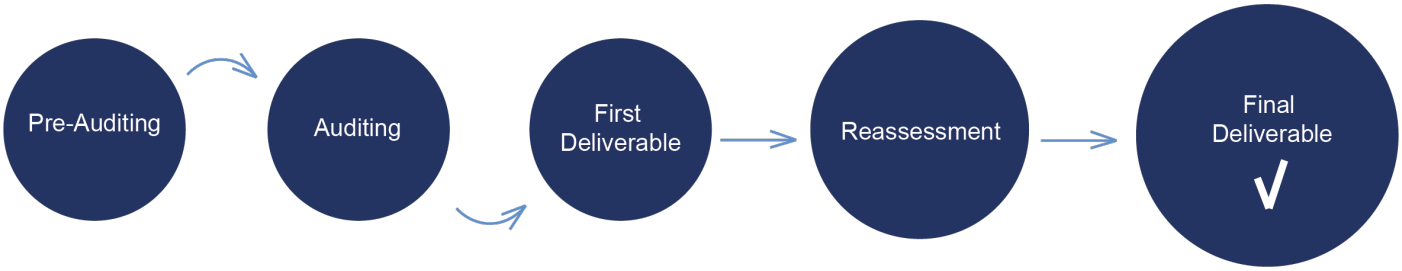
**PomeranianPuppy**

**Medium Risk Level**

| | |
|---|---|
| Communication Channels | Website Content Analysis,<br>Social Media Listening |
| Smart Contract Code | Smart Contract Details, Contract Function Details,<br>Issues Checking Status, Detailed Findings<br>Information |

THIS TOKEN PASSES CHECKPOINT'S SECURITY VERIFICATION STANDART

# 2 Audit Methodology




CheckPoint conducts the following procedure to enhance the security level of our clients' tokens:

- **Pre-Auditing**

  Planning a comprehensive survey of the token, its ecosystem, possible risks & prospects, getting to understand the overall operations of the related smart contracts, checking for readiness, and preparing for the auditing.

- **Auditing**

  Study of all available information about the token on the Web, inspecting the smart contracts using automated analysis tools and manual analysis by a team of professionals.

- **First Deliverable and Consulting**

  Delivering a preliminary report on the findings with suggestions on how to remediate those issues and providing consultation.

- **Reassessment**

  Verifying the status of the issues and whether there are any other complications in the fixes applied.

- **Final Deliverable**

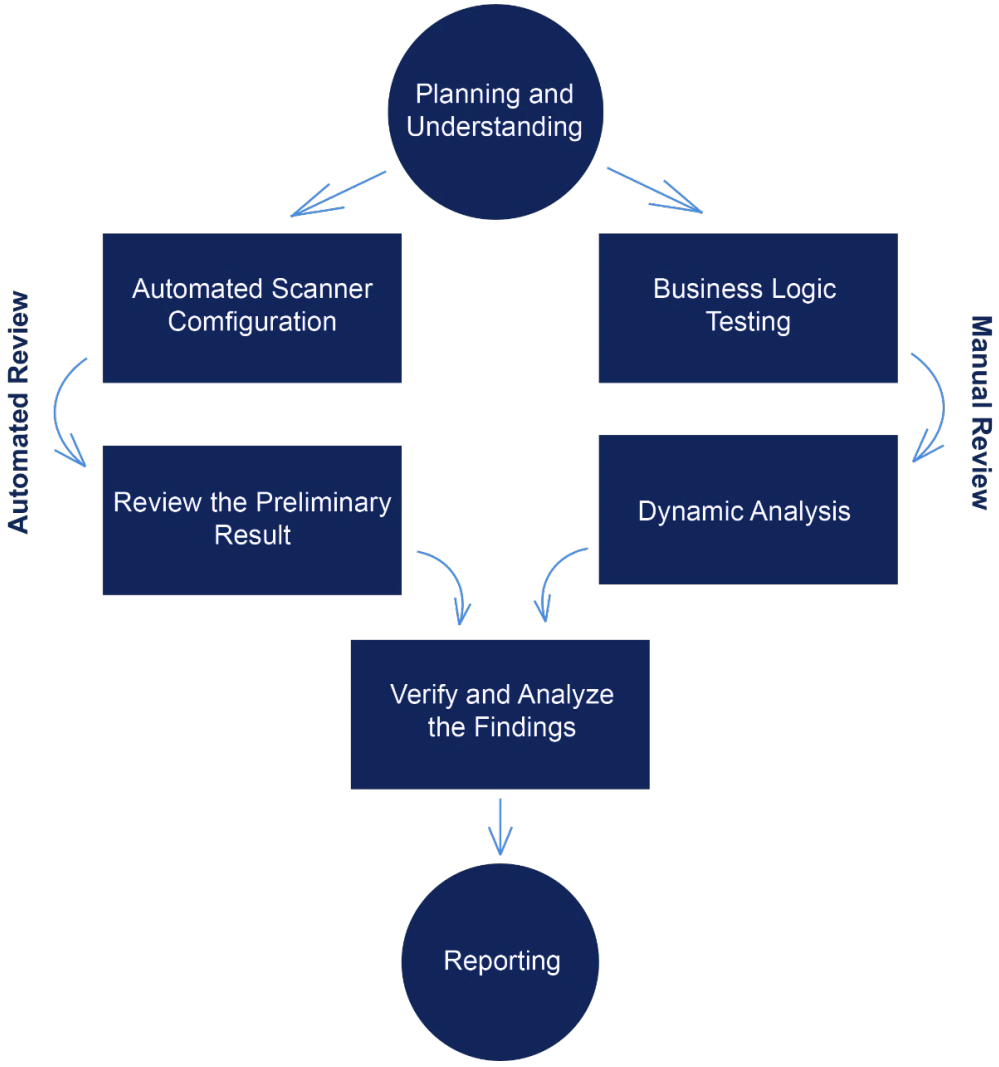
  Providing a full report with the detailed status of each issue.

The security audit process of CheckPoint includes three types testing:

1. Examining publicly available information about the token on social networks, including a detailed overview of the official website and analysis of the latest messages and opinions about the token.

2. Smart contract codes are scanned/tested for commonly known and more specific vulnerabilities using automated analysis tools.

3. Manual audit of the codes for security issues. The contracts are manually analyzed to look for any potential problems.




*Remark: Manual and Automated review approaches can be mixed and matched including business logic analysis in terms of malicious doers' perspective*

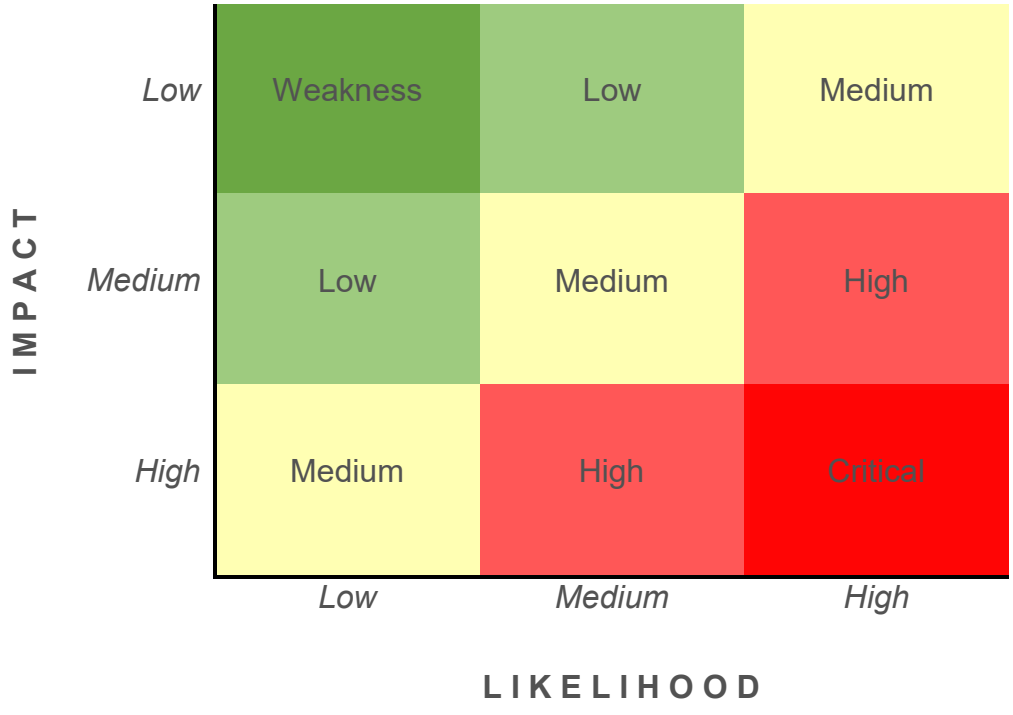
In particular, we perform the audit according to the following procedure:

- **Planning & Understanding**
  - determine scope of testing and understand application purpose and workflows;
  - identify key risk areas, including technical and business risks;
  - determine approach – which sections to review within the resource constraints and review method – automated, manual or mixed.
- **Automated Review**
  - adjust automated source code review tools to inspect the code for known unsafe coding patterns;
  - verify output of the tool in order to eliminate false positive result, and if necessary, adjust and re-run the code review tool.
- **Manual Review**
  - testing for business logic flaws requires thinking in unconventional methods;
  - identify unsafe coding behavior via static code analysis.
- **Reporting**
  - analyze the root cause of the flaws;
  - recommend coding process improvements.

# 3 Risk Level Classification

To standardize the evaluation, we define the following terminology based on OWASP Risk Rating Methodology:

- **Likelihood** represents how likely a particular vulnerability is to be uncovered and exploited in the wild.
- **Impact** measures the technical loss and business damage of a successful attack.
- **Severity** demonstrates the overall criticality of the risk and calculated as the product of impact and likelihood values, illustrated in a twodimensional matrix. The shading of the matrix visualizes the different risk levels.




*Remark: Likelihood and Impact are categorized into three levels: H, M, and L, i.e., High, Medium and Low respectively. Severity is determined by likelihood and impact and can be classified into five categories accordingly, i.e., Critical, High, Medium, Low and Weakness*

For prioritization of the vulnerabilities, we have adopted the scheme by five distinct levels for risk: Critical, High, Medium, Low, and Weakness. The risk level definitions are presented in table.

| LEVEL | DESCRIPTION |
| --- | --- |
| Weakness | There are safety risks theoretically, but it is extremely difficult to reproduce in engineering |
| Low | Low severity vulnerabilities may affect the operation of the DeFi project in certain scenarios |
| Medium | Medium severity vulnerability will affect the operation of the DeFi project. It is recommended to fix medium-risk vulnerabilities |
| High | High severity vulnerabilities will affect the normal operation of the DeFi project. It is strongly recommended to fix high-risk vulnerabilities |
| Critical | Critical severity vulnerabilities will have a significant impact on the security of the DeFi project |

# 4 Project Overview

## 4.1 Communication Channels

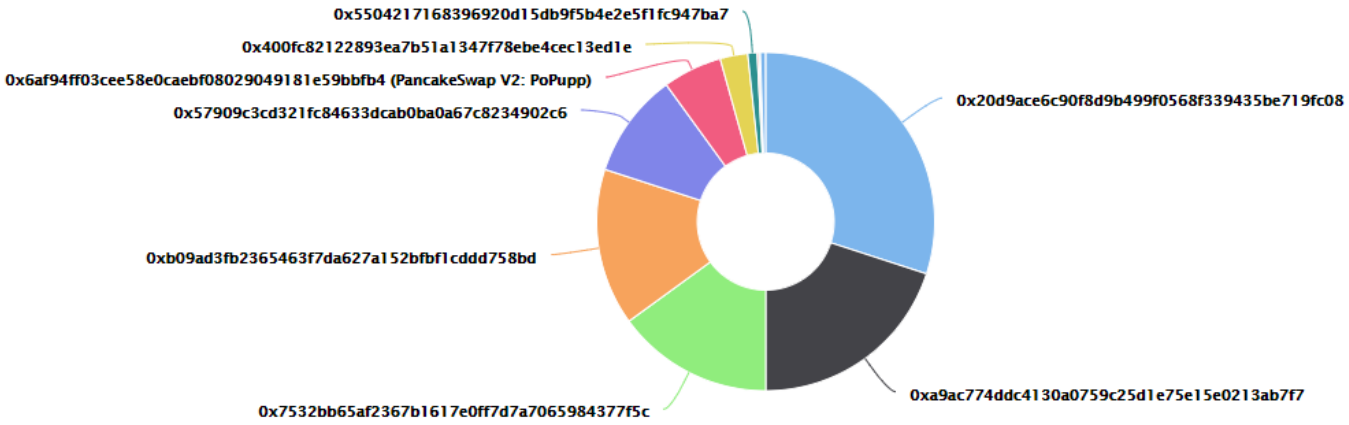
- ✓ No Website [RISK]
- ✓ 1 Social Media Networks [RISK]
- ✓ < 1000 Telegram Members [RISK]
- ✓ No Active Voice Chats [RISK]
- ✓ No Injected Spam Found
- ✓ No Popus Found

*Remark: This page contains active links*

## 4.2 Smart Contract Details

| | |
|---|---|
| Contract Name | PomeranianPuppy |
| Contract Address | 0xB0ADbEe9c16F4ef27aE53686De3290C720c34e48 |
| Total Supply | 10,000,000,000 |
| Token Ticker | PoPupp |
| Decimals | 9 |
| Token Holders | 16 |
| Transactions Count | 25 |
| Top 10 Holders Dominance | 99,50% |
| Liquidity Fee | 1% |
| Tax Fee | 10% |
| Total Fees | 24688483893461655 |
| Uniswap V2 Pair | 0x6af94ff03cee58e0caebf08029049181e59bbfb4 |
| Contract Deployer Address | 0x400fc82122893ea7b51a1347f78ebe4cec13ed1e |
| Current Owner Address | 0x400fc82122893ea7b51a1347f78ebe4cec13ed1e |

# PomeranianPuppy Top 10 Token Holders

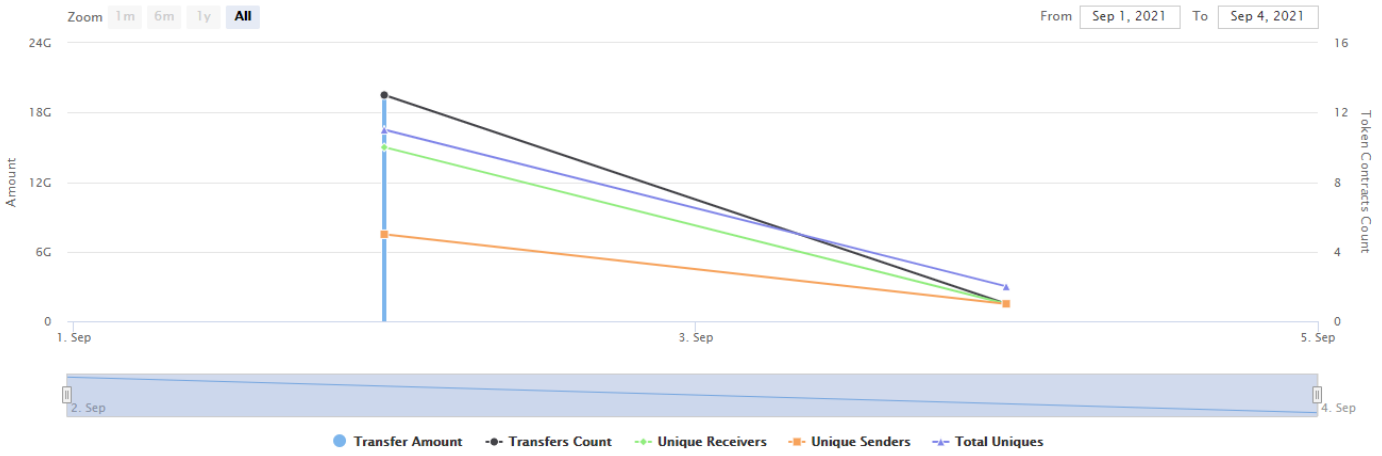



| Rank | Address | Quantity (Token) | Percentage |
|---|---|---|---|
| 1 | 0x20d9ace6c90f8d9b499f0568f339435be719fc08 | 3,000,000,000 | 30.0000% |
| 2 | 0xa9ac774ddc4130a0759c25d1e75e15e0213ab7f7 | 1,999,615,760.796219423 | 19.9962% |
| 3 | 0x7532bb65af2367b1617e0ff7d7a7065984377f5c | 1,500,000,000 | 15.0000% |
| 4 | 0xb09ad3fb2365463f7da627a152bfbf1cddd758bd | 1,500,000,000 | 15.0000% |
| 5 | 0x57909c3cd321fc84633dcab0ba0a67c8234902c6 | 1,000,000,000 | 10.0000% |
| 6 | PancakeSwap V2: PoPupp | 567,014,957.359521392 | 5.6701% |
| 7 | 0x400fc82122893ea7b51a1347f78ebe4cec13ed1e | 263,802,287.518656619 | 2.6380% |
| 8 | 0x5504217168396920d15db9f5b4e2e5f1fc947ba7 | 89,116,927.655902216 | 0.8912% |
| 9 | 0xa53e48884f8a2d26deed6094c146f8a0f6593ce9 | 16,927,177.279208161 | 0.1693% |
| 10 | 0xae37e6c015306892508da0526c32c01eb0283dd7 | 13,445,153.976256452 | 0.1345% |

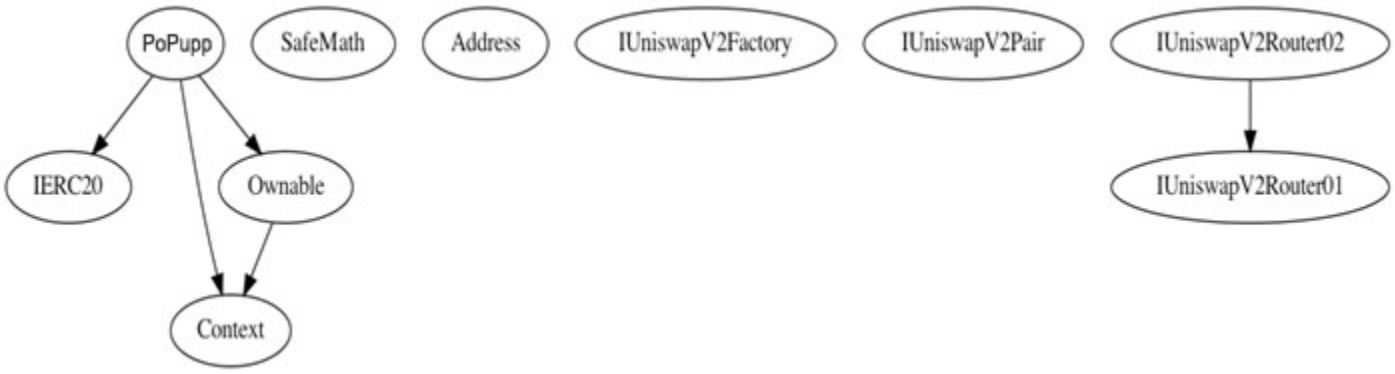
**[RISK] PancakeSwap holds only ~5,7% of the token's supply as liquidity**

**[RISK] No information about LP tokens' holders**

# PomeranianPuppy Contract Interaction Details



## 4.3 Contract Function Details




```
$ = payable function
# = non-constant function
[Int] = Internal
[Pub] = Public
[Prv] = Private
[Ext] = External

+ [Int] IERC20
   - [Ext] totalSupply
   - [Ext] balanceOf
   - [Ext] transfer #
   - [Ext] allowance
   - [Ext] approve #
   - [Ext] transferFrom #

+ [Lib] SafeMath
   - [Int] add
   - [Int] sub
   - [Int] sub
   - [Int] mul
   - [Int] div
   - [Int] div
   - [Int] mod
   - [Int] mod

+ Context
   - [Int] _msgSender
   - [Int] _msgData

+ [Lib] Address
   - [Int] isContract
   - [Int] sendValue #
   - [Int] functionCall #
   - [Int] functionCall #
   - [Int] functionCallWithValue #
```

```
  - [Int] functionCallWithValue #
  - [Prv] functionCallWithValue #

+ Ownable (Context)
  - [Int] <Constructor> #
  - [Pub] owner
  - [Pub] renounceOwnership #
    - modifiers: onlyOwner
  - [Pub] transferOwnership #
    - modifiers: onlyOwner
  - [Pub] geUnlockTime
  - [Pub] lock #
    - modifiers: onlyOwner
  - [Pub] unlock #

+ [Int] IUniswapV2Factory
  - [Ext] feeTo
  - [Ext] feeToSetter
  - [Ext] getPair
  - [Ext] allPairs
  - [Ext] allPairsLength
  - [Ext] createPair #
  - [Ext] setFeeTo #
  - [Ext] setFeeToSetter #

+ [Int] IUniswapV2Pair
  - [Ext] name
  - [Ext] symbol
  - [Ext] decimals
  - [Ext] totalSupply
  - [Ext] balanceOf
  - [Ext] allowance
  - [Ext] approve #
  - [Ext] transfer #
  - [Ext] transferFrom #
  - [Ext] DOMAIN_SEPARATOR
  - [Ext] PERMIT_TYPEHASH
  - [Ext] nonces
  - [Ext] permit #
  - [Ext] MINIMUM_LIQUIDITY
  - [Ext] factory
  - [Ext] token0
  - [Ext] token1
  - [Ext] getReserves
  - [Ext] price0CumulativeLast
  - [Ext] price1CumulativeLast
  - [Ext] kLast
  - [Ext] mint #
  - [Ext] burn #
  - [Ext] swap #
```

```
  - [Ext] skim #
  - [Ext] sync #
  - [Ext] initialize #

+ [Int] IUniswapV2Router01
  - [Ext] factory
  - [Ext] WETH
  - [Ext] addLiquidity #
  - [Ext] addLiquidityETH $
  - [Ext] removeLiquidity #
  - [Ext] removeLiquidityETH #
  - [Ext] removeLiquidityWithPermit #
  - [Ext] removeLiquidityETHWithPermit #
  - [Ext] swapExactTokensForTokens #
  - [Ext] swapTokensForExactTokens #
  - [Ext] swapExactETHForTokens $
  - [Ext] swapTokensForExactETH #
  - [Ext] swapExactTokensForETH #
  - [Ext] swapETHForExactTokens $
  - [Ext] quote
  - [Ext] getAmountOut
  - [Ext] getAmountIn
  - [Ext] getAmountsOut
  - [Ext] getAmountsIn

+ [Int] IUniswapV2Router02 (IUniswapV2Router01)
  - [Ext] removeLiquidityETHSupportingFeeOnTransferTokens #
  - [Ext] removeLiquidityETHWithPermitSupportingFeeOnTransferTokens #
  - [Ext] swapExactTokensForTokensSupportingFeeOnTransferTokens #
  - [Ext] swapExactETHForTokensSupportingFeeOnTransferTokens $
  - [Ext] swapExactTokensForETHSupportingFeeOnTransferTokens #

+ PomeranianPuppy (Context, IERC20, Ownable)
  - [Pub] <Constructor> #
  - [Pub] name
  - [Pub] symbol
  - [Pub] decimals
  - [Pub] totalSupply
  - [Pub] balanceOf
  - [Pub] transfer #
  - [Pub] allowance
  - [Pub] approve #
  - [Pub] transferFrom #
  - [Pub] increaseAllowance #
  - [Pub] decreaseAllowance #
  - [Pub] isExcludedFromReward
  - [Pub] totalFees
  - [Pub] deliver #
  - [Pub] reflectionFromToken
  - [Pub] tokenFromReflection
```

- [Pub] excludeFromReward #
  - modifiers: onlyOwner
- [Ext] includeInReward #
  - modifiers: onlyOwner
- [Prv] _transferBothExcluded #
- [Pub] excludeFromFee #
  - modifiers: onlyOwner
- [Pub] includeInFee #
  - modifiers: onlyOwner
- [Ext] setTaxFeePercent #
  - modifiers: onlyOwner
- [Ext] setLiquidityFeePercent #
  - modifiers: onlyOwner
- [Ext] setMaxTxPercent #
  - modifiers: onlyOwner
- [Pub] setSwapAndLiquifyEnabled #
  - modifiers: onlyOwner
- [Ext] <Fallback> $
- [Prv] _reflectFee #
- [Prv] _getValues
- [Prv] _getTValues
- [Prv] _getRValues
- [Prv] _getRate
- [Prv] _getCurrentSupply
- [Prv] _takeLiquidity #
- [Prv] calculateTaxFee
- [Prv] calculateLiquidityFee
- [Prv] removeAllFee #
- [Prv] restoreAllFee #
- [Pub] isExcludedFromFee
- [Prv] _approve #
- [Prv] _transfer #
- [Prv] swapAndLiquify #
- [Pub] _swapTokensForEth #
- [Pub] _addLiquidity #
- [Prv] _tokenTransfer #
- [Prv] _transferStandard #
- [Prv] _transferToExcluded #
- [Prv] _transferFromExcluded #

## 4.4 Issues Checking Status

| CHECKING ITEM | NOTES | RESULT |
|---|---|---|
| Arbitrary Jump with Function Type Variable | N / A | PASS |
| Arithmetic Accuracy Deviation | N / A | PASS |
| Assert Violation | N / A | PASS |
| Authorization through tx.origin | N / A | PASS |
| Business Logic | N / A | PASS |
| Code with No Effects | N / A | PASS |
| Critical Solidity Compiler | N / A | PASS |
| Delegatecall to Untrusted Callee | N / A | PASS |
| Design Logic | N / A | LOW RISK |
| DoS with Block Gas Limit | N / A | LOW RISK |
| DoS with Failed Call | N / A | PASS |
| Function Default Visibility | N / A | PASS |
| Hash Collisions With MVLA | N / A | PASS |
| Incorrect Constructor Name | N / A | PASS |
| Incorrect Inheritance Order | N / A | PASS |
| Integer Overflows and Underflows | N / A | PASS |
| Lack of Proper Signature Verification | N / A | PASS |
| Message Call with Hardcoded Gas Amount | N / A | PASS |
| Missing Protection Against SRA | N / A | PASS |
| Presence of Unused Variables | N / A | PASS |
| Reentrancy | N / A | PASS |
| Requirement Violation | N / A | PASS |

| CHECKING ITEM | NOTES | RESULT |
|---|---|---|
| Right-To-Left-Override Control Character | N / A | PASS |
| Shadowing State Variables | N / A | PASS |
| Signature Malleability | N / A | PASS |
| State Variable Default Visibility | N / A | PASS |
| Timestamp Dependence | N / A | PASS |
| Transaction Order Dependence | N / A | PASS |
| Typographical Error | N / A | PASS |
| Unencrypted Private Data On-Chain | N / A | PASS |
| Unexpected Ether balance | N / A | PASS |
| Uninitialized Storage Pointer | N / A | PASS |
| Use of Deprecated Solidity Functions | N / A | PASS |
| Weak Sources of Randomness From CA | N / A | PASS |
| Write to Arbitrary Storage Location | N / A | PASS |

*Remark: To evaluate the risk, we go through a list of check items and each would be labeled with a severity category. For one check item, if our tool or analysis does not identify any issue, the contract is considered safe regarding the check item*

## 4.5 Detailed Findings Information

### [RISK] DoS with Block Gas Limit

- The function `includeInReward` uses the loop to find and remove addresses from the _excluded list. It also could be aborted with out-of-gas exception if there will be a long excluded addresses list. Including an account in the reward again may result in unexpected behavior.

```
function includeInReward(address account) external onlyOwner() {
    require(_isExcluded[account], "Account is already excluded");
    for (uint256 i = 0; i < _excluded.length; i++) {
        if (_excluded[i] == account) {
            _excluded[i] = _excluded[_excluded.length - 1];
            _tOwned[account] = 0;
            _isExcluded[account] = false;
            _excluded.pop();
            break;
        }
    }
}
```

**Recommendation: Consider removing the includeInReward function. If this is not desired, consider avoiding it, especially on accounts with a significant balance.**

- The function `_getCurrentSupply()` uses the loop for evaluating total supply. It also could be aborted with out-of-gas exception if there will be a long excluded addresses list.

```
function _getCurrentSupply() private view returns(uint256, uint256) {
    uint256 rSupply = _rTotal;
    uint256 tSupply = _tTotal;
    for (uint256 i = 0; i < _excluded.length; i++) {
        if (_rOwned[_excluded[i]] > rSupply || _tOwned[_excluded[i]] > tSupply) return (_rTotal, _tTotal);
        rSupply = rSupply.sub(_rOwned[_excluded[i]]);
        tSupply = tSupply.sub(_tOwned[_excluded[i]]);
    }
    if (rSupply < _rTotal.div(_tTotal)) return (_rTotal, _tTotal);
    return (rSupply, tSupply);
}
```

**Recommendation: Check that the excluded array length is not too big.**

### [RISK] Owner Privileges (in the period when the owner is not renounced)

The contract contains the following privileged functions that are restricted by the onlyOwner.

- The owner can lock and unlock. Using these functions the owner could retake privileges even after the ownership was renounced.

```
function lock(uint256 time) public virtual onlyOwner {
    _previousOwner = _owner;
    _owner = address(0);
    _lockTime = now + time;
    emit OwnershipTransferred(_owner, address(0));
}

//Unlocks the contract for owner when _lockTime is exceeds
function unlock() public virtual {
    require(_previousOwner == msg.sender, "You don't have permission to unlock");
    require(now > _lockTime , "Contract is locked until 7 days");
    emit OwnershipTransferred(_owner, _previousOwner);
    _owner = _previousOwner;
}
```

- The owner of the contract can exclude/include accounts from/to transfer fees and reward distribution.

```
    function excludeFromFee(address account) public onlyOwner {
    _isExcludedFromFee[account] = true;
}

function includeInFee(address account) public onlyOwner {
    _isExcludedFromFee[account] = false;
}
```

```
function excludeFromReward(address account) public onlyOwner() {
    // require(account != 0x7a250d5630B4cF539739dF2C5dAcb4c659F2488D, 'We can not exclude Pancake router.');
    require(!_isExcluded[account], "Account is already excluded");
    if (_rOwned[account] > 0) {
        _tOwned[account] = tokenFromReflection(_rOwned[account]);
    }
    _isExcluded[account] = true;
    _excluded.push(account);
}

function includeInReward(address account) external onlyOwner() {
    require(_isExcluded[account], "Account is already excluded");
    for (uint256 i = 0; i < _excluded.length; i++) {
        if (_excluded[i] == account) {
            _excluded[i] = _excluded[_excluded.length - 1];
            _tOwned[account] = 0;
            _isExcluded[account] = false;
            _excluded.pop();
            break;
        }
    }
}
```

- The owner can change tax and liquidity fees.

```
function setTaxFeePercent(uint256 taxFee) external onlyOwner() {
    _taxFee = taxFee;
}

function setLiquidityFeePercent(uint256 liquidityFee) external onlyOwner() {
    _liquidityFee = liquidityFee;
}
```

- The owner can enable or disable adding liquidity to pool.

```
function setSwapAndLiquifyEnabled(bool _enabled) public onlyOwner {
    swapAndLiquifyEnabled = _enabled;
    emit SwapAndLiquifyEnabledUpdated(_enabled);
}
```

- The owner can change the maximal amount per transaction.

```
function setMaxTxPercent(uint256 maxTxPercent) public onlyOwner() {
    _maxTxAmount = _tTotal.mul(maxTxPercent).div(10000);
}
```

# 5 Audit Result

| LEVEL | ISSUES |
| --- | --- |
| Weakness | DoS with Block Gas Limit (2) |
| Medium | Owner Privilegies (8) |

1. The contract utilizes SafeMath libraries along with following the ERC20 standard.

2. The owner has the ability to set and update a maximum transaction amount at any time, which will impose a limit to the number of tokens that can be transferred during any given transaction. The default maximum is set to 100% of the total token supply.

3. This maximum transaction amount does not apply to the owner during transactions where the owner is either the sender or the recipient.

4. There is a 'Tax fee' and a 'Liquidity fee' on all transactions for any non-excluded address that participates in a transfer. The owner has the ability to modify these to any percentage fees at any time.

5. The recipient of the newly created LP tokens is the Owner of the contract.

6. The owner has the ability to set and update a maximum transaction percent at any time, which will impose a limit to the number of tokens that can be transferred during any given transaction. The owner can also include and exclude accounts from this transaction limit.

7. This maximum transaction amount does not apply to the owner during transactions where the owner is either the sender or the recipient.

8. The owner of the contract can exclude accounts from transfer fees and reward distribution.

9. The owner has the ability to use the ‘lock’ function in order to temporarily set ownership to address(0). Ownership is restored after the duration of time determined by the owner has passed and they use the 'unlock' function. Ownership can additionally be restored (even if ownership was previously renounced), by using the unlock function a second time.

10. Ownership has not been renounced.

## 5.1 Findings Summary

### PomeranianPuppy
### Medium Risk Level

- ✓ No external vulnerabilities were identified within the smart contract's code
- ✓ We strongly recommend that the team renounces ownership
- ✓ Please ensure trust in the team prior to investing as they have substantial control within the ecosystem
- ✓ We strongly recommend that the contract owners remove errors and re-audit

# 6 Disclamer

CheckPoint team issues this report with reference to the facts that have occurred or existed before the issuance of this report, and only assumes corresponding responsibility based on these. For the facts that occurred or existed after the issuance, CheckPoint is not able to judge the security status of this project, and is not responsible for them. The security audit analysis and other contents of this report are based on the documents and materials provided to CheckPoint by the information provider till the date of the insurance report. CheckPoint is not responsible for the background and other conditions of the project.

This security audit is not produced to supplant any other type of assessment and does not guarantee the discovery of all security vulnerabilities within the scope of the assessment. However, we warrant that this audit is conducted with goodwill, professional approach, and competence. Since an assessment from one single party cannot be confirmed to cover all possible issues within the smart contract(s), CheckPoint suggests conducting multiple independent assessments to minimize the risks. Lastly, nothing contained in this audit report should be considered as investment advice.

CheckPoint

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