



AUDITED BY  
**LOVELY  
INSPECTOR**



# SMART CONTRACT

## SECURITY AUDIT

### ARKHAM TOKEN



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## DISCLAIMER

This is a comprehensive report based on our automated and manual examination of cybersecurity vulnerabilities and framework flaws of the project's smart contract. Reading the full analysis report is essential to build your understanding of the project's security level. It is crucial to take note, though we have done our best to perform this analysis and report, that you should not rely on our research and cannot claim what it states or how we created it. Before making any judgments, you have to conduct your own independent research. We will discuss this in more depth in the following disclaimer - please read it fully. **DISCLAIMER:** You agree to the terms of this disclaimer by reading this report or any portion thereof. Please stop reading this report and remove and delete any copies of this report that you download and/or print if you do not agree to these conditions. Scan and verify the report's presence in the GitHub repository by a QR code on the title page. This report is for non-reliability information only and does not represent investment advice. No one shall be entitled to depend on the report or its contents, and Inspector Lovely and its affiliates shall not be held responsible to you or anyone else, nor shall Inspector Lovely provide any guarantee or representation to any person with regard to the accuracy or integrity of the report. Without any terms, warranties, or other conditions other than as set forth in that exclusion Inspector Lovely excludes hereby all representations, warrants, conditions, and other terms (including, without limitation, guarantees implied by the law of satisfactory quality, fitness for purposes and the use of reasonable care and skills). The report is provided as "as is" and does not contain any terms and conditions. Except as legally banned, Inspector Lovely disclaims all responsibility and responsibilities, and no claim against Inspector Lovely is made to any amount or type of loss or damages (without limitation, direct, indirect, special, punitive, consequential, or pure economic losses or losses) that may be caused by you or any other person, or any damages or damages, including without limitations (whether innocent or negligent). Security analysis is based only on smart contracts. No applications or operations were reviewed for security. No product code has been reviewed.



# AUDIT SCOPE

<b>Name</b>	Code Review and Security Analysis Report for Arkham Token Coin Smart Contract
<b>Platform</b>	Ethereum
<b>File 1</b>	ARKM.sol
<b>Ethereum Code</b>	<u><a href="#">0x2291323cf23d1553c6f79dc30b4a8865c03a90cf</a></u>
<b>Audit Date</b>	November 8th, 2023







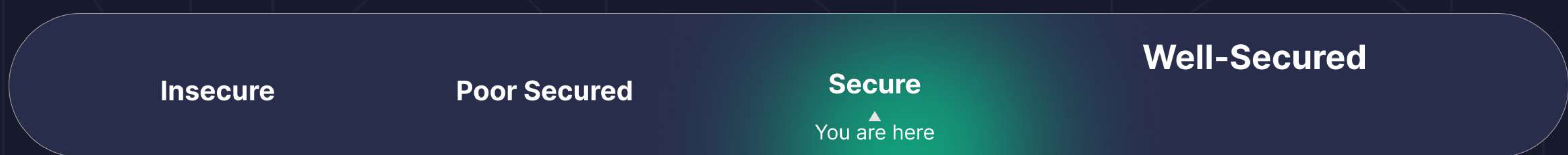
# PROPOSED SMART CONTRACT FEATURES

Claimed Feature Detail	Our Observation
<p><b>Tokenomics:</b></p> <ul style="list-style-type: none"><li>• Name: Arkham</li><li>• Symbol: AKRM</li><li>• Decimals: 18</li><li>• Total Supply: 1 Billion</li></ul>	Validated
<p><b>Ownership control:</b></p> <ul style="list-style-type: none"><li>• The owner can pause/unpause the contract state.</li><li>• Mint a new token.</li><li>• Current owner can transfer the ownership.</li><li>• Owner can renounce ownership</li></ul>	Validated



## AUDIT SUMMARY

According to the standard audit assessment, the Customer`s solidity-based smart contracts are **“Secured”**. Also, these contracts contain owner control, which does not make them fully decentralized.



We used various tools like Slither, Solhint, and Remix IDE. At the same time, this finding is based on a critical analysis of the manual audit.

All issues found during automated analysis were manually reviewed and applicable vulnerabilities are presented in the Audit Overview section. General overview is presented in AS-IS section and all identified issues can be found in the Audit overview section.

**We found 0 critical, 0 high, 0 medium and 0 low, and 0 very low level issues.**

**Investors Advice:** Technical audit of the smart contract does not guarantee the ethical nature of the project. Any owner-controlled functions should be executed by the owner with responsibility. All investors/users are advised to do their due diligence before investing in the project.



# KEY TECHNICAL METRICS

MAIN CATEGORY	SUBCATEGORY	RESULT
<b>Contract Programming</b>	Solidity version is not specified	Passed
	Solidity version is too old	Passed
	Integer overflow/underflow	Passed
	Function input parameters lack check	Passed
	Function input parameters check bypass	Passed
	Function access control lacks management	Passed
	Critical operation lacks event log	Passed
	Human/contract checks bypass	Passed
	Random number generation/use vulnerability	N/A
	Fallback function misuse	Passed
	Race condition	Passed
	Logical vulnerability	Passed
	Features claimed	Passed
	Other programming issues	Passed
<b>Code Specification</b>	Function visibility not explicitly declared	Passed
	Var. storage location not explicitly declared	Passed
	Use keywords/functions to be deprecated	Passed
	Unused code	Passed
<b>Gas Optimization</b>	"Out of Gas" Issue	Passed
	High consumption 'for/while' loop	Passed
	High consumption 'storage' storage	Passed
	Assert() misuse	Passed
<b>Business Risk</b>	The maximum limit for mintage is not set	Passed
	"Short Address" Attack	Passed
	"Double Spend" Attack	Passed

**Overall Audit Result: PASSED**



# BUSINESS RISK ANALYSIS

CATEGORY	RESULT
● Buy Tax	0%
● Sell Tax	0%
● Cannot Buy	Not Detected
● Cannot Sell	Not Detected
● Max Tax	0%
● Modify Tax	Not Detected
● Fee Check	No
● Is Honeypot	Not Detected
● Trading Cooldown	Not Detected
● Can Pause Trade?	No
● Pause Transfer?	No
● Max Tax?	No
● Is it Anti-whale?	No
● Is Anti-bot?	Not Detected
● Is it a Blacklist?	Not Detected
● Blacklist Check	No
● Can Mint?	No
● Is it Proxy?	Not Detected
● Can Take Ownership?	No
● Hidden Owner?	Not Detected
● Self Destruction?	Not Detected
● Auditor Confidence	High

**Overall Audit Result: PASSED**





## CODE QUALITY

This audit scope has 1 smart contract. Smart contract contains Libraries, Smart contracts, inherits, and Interfaces. This is a compact and well written smart contract.

The libraries in Pendle Token are part of its logical algorithm. A library is a different type of smart contract that contains reusable code. Once deployed on the blockchain (only once), it is assigned a specific address and its properties/methods can be reused many times by other contracts in the Pendle Token.

The EtherAuthority team has not provided scenario and unit test scripts, which would have helped to determine the integrity of the code in an automated way.

Code parts are well commented on in the smart contracts. Ethereum's NatSpec commenting style is recommended.

## DOCUMENTATION

We were given a Pendle Token smart contract code in the form of an [Etherscan](#) web link.

As mentioned above, code parts are well commented on. and the logic is straightforward. So it is easy to quickly understand the programming flow as well as complex code logic. Comments are very helpful in understanding the overall architecture of the protocol.

Another source of information was its official website: <https://www.arkhamintelligence.com> which provided rich information about the project architecture and tokenomics.

## USE OF DEPENDENCIES

As per our observation, the libraries are used in this smart contract infrastructure that are based on well-known industry standard open-source projects.

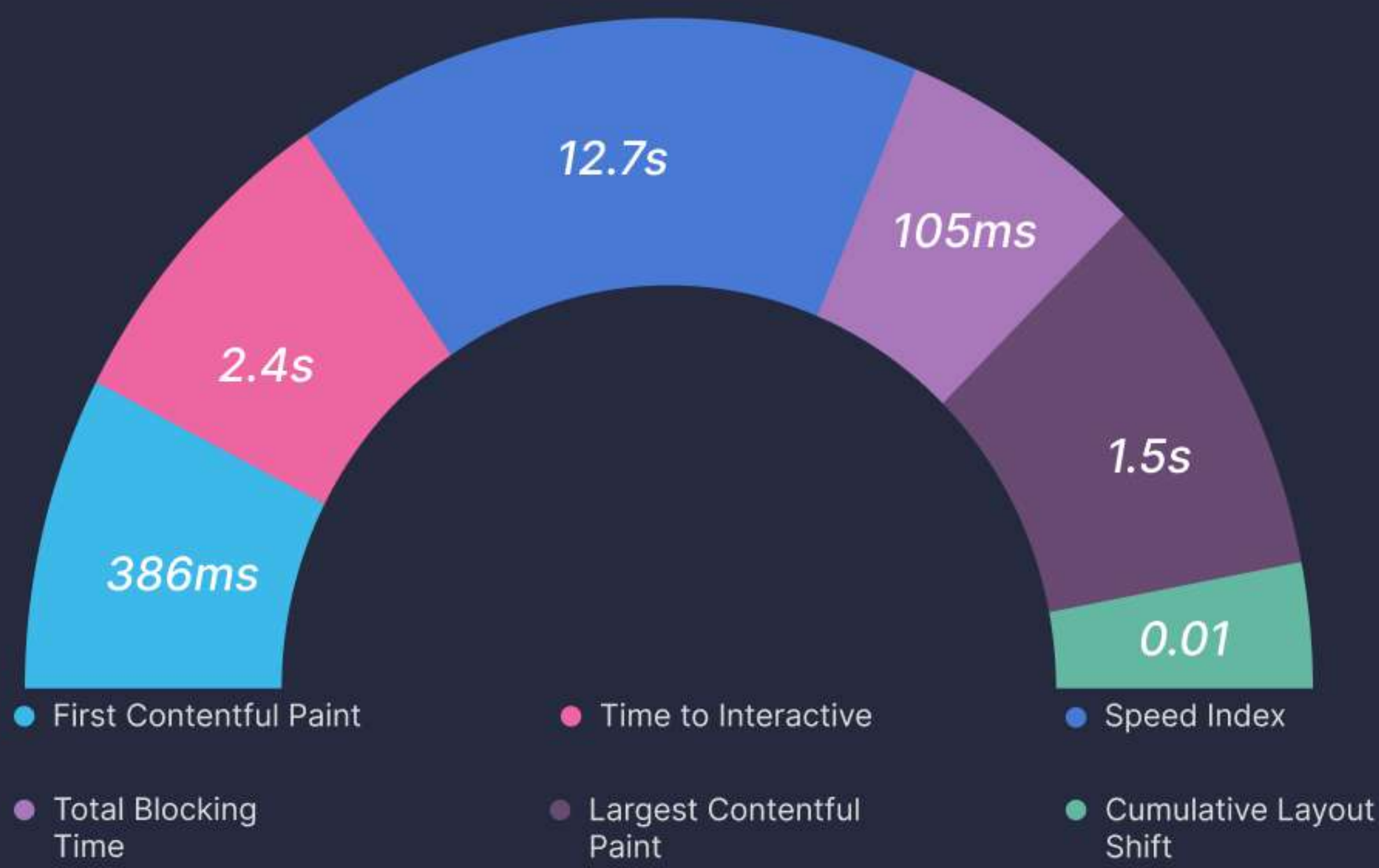
Apart from libraries, its functions are not used in external smart contract calls.





## PROJECT WEBSITE PERFORMANCE AUDIT

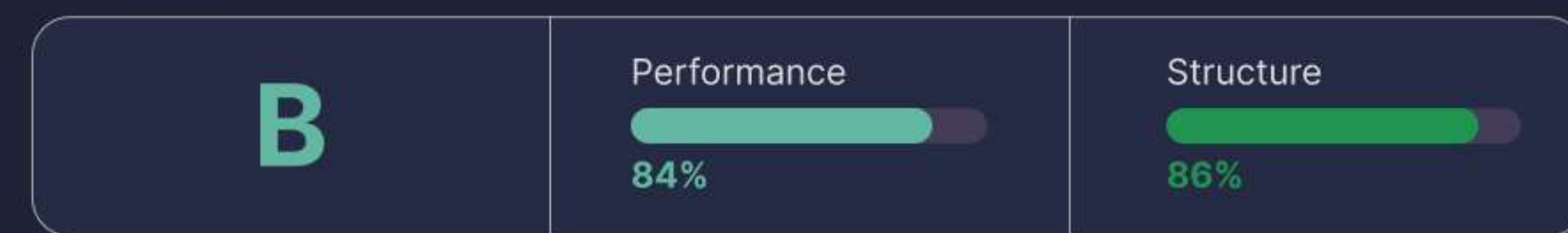
### Performance Metrics



### Browser Timings

Redirect Duration	0ms	Connection Duration	126ms	Backend Duration	47ms
Time to First Byte	173ms	First Paint	387ms	DOM Interactive Time	599ms
DOM Content Loaded	624ms	Onload Time	1.5s	Fully Loaded Time	2.9s

### Grade



### Web Vitals

LCP	TBT	CLS
1.5s	105ms	0.01

### Top Issues

IMPACT

AUDIT

High

Avoid enormous network payloads (LCP)

URL

SIZE

• <a href="https://d1e09wm0wupq53.cloudfront.net/arkham/webm/3.webm">https://d1e09wm0wupq53.cloudfront.net/arkham/webm/3.webm</a>	12.0MB
• <a href="https://d1e09wm0wupq53.cloudfront.net/arkham/webm/1.webm">https://d1e09wm0wupq53.cloudfront.net/arkham/webm/1.webm</a>	9.9MB
• <a href="https://d1e09wm0wupq53.cloudfront.net/arkham/webm/2.webm">https://d1e09wm0wupq53.cloudfront.net/arkham/webm/2.webm</a>	8.34MB
• <a href="https://d1e09wm0wupq53.cloudfront.net/arkham/webm/4.webm">https://d1e09wm0wupq53.cloudfront.net/arkham/webm/4.webm</a>	7.09MB
• <a href="https://assets.website-files.com/62879326fd745f7489b43224/62a0c38a3350bde261e4d2aa_ALERT-transcode.mp4">https://assets.website-files.com/62879326fd745f7489b43224/62a0c38a3350bde261e4d2aa_ALERT-transcode.mp4</a>	5.37MB
• <a href="https://assets.website-files.com/62879326fd745f7489b43224/62a0c38a3350bde261e4d2aa_ALERT-transcode.mp4">https://assets.website-files.com/62879326fd745f7489b43224/62a0c38a3350bde261e4d2aa_ALERT-transcode.mp4</a>	1.18MB
• <a href="https://assets-global.website-files.com/62879326fd745f7489b43224/62a3a7248e6a2b47b66bd26c_Arkham_pentagon_7_3_1-transcode.mp4">https://assets-global.website-files.com/62879326fd745f7489b43224/62a3a7248e6a2b47b66bd26c_Arkham_pentagon_7_3_1-transcode.mp4</a>	1.12MB
• <a href="https://assets-global.website-files.com/62879326fd745f7489b43224/641e0dc90bc3e0bfb3d910a3_city-bg.webp">https://assets-global.website-files.com/62879326fd745f7489b43224/641e0dc90bc3e0bfb3d910a3_city-bg.webp</a>	321KB
• <a href="https://assets-global.website-files.com/6296255d9030be506dc09bb7/6421cc820a29f76a25e030d9_Screen%20Shot%202023-03-23%20at%202.03.34%20PM.png">https://assets-global.website-files.com/6296255d9030be506dc09bb7/6421cc820a29f76a25e030d9_Screen%20Shot%202023-03-23%20at%202.03.34%20PM.png</a>	297KB
• <a href="https://assets-global.website-files.com/62879326fd745f7489b43224/js/arkham.ddd5eb7a3.js">https://assets-global.website-files.com/62879326fd745f7489b43224/js/arkham.ddd5eb7a3.js</a>	165KB





## LEVEL OF CRITICALITY

RISK LEVEL	DESCRIPTION
Critical	Critical vulnerabilities are usually straightforward to exploit and can lead to token loss etc.
High	High-level vulnerabilities are difficult to exploit; however, they also have significant impact on smart contract execution, e.g. public access to crucial
Med	Medium-level vulnerabilities are important to fix; however, they can't lead to tokens lose
Low	Low-level vulnerabilities are mostly related to outdated, unused etc. code snippets, that can't have significant impact on execution
Lowest / Code Style / Best Practice	Lowest-level vulnerabilities, code style violations and info statements can't affect smart contract execution and can be ignored.



## AUDIT FINDINGS TABLE

	Total	Resolved	UnResolved	Acknowledged
High Severity Issues Found	0	0	0	0
Moderate Severity Issues Found	0	0	0	0
Medium Severity Issues	0	0	0	0
Low Severity Issues	0	0	0	0
Informational Observations	0	0	0	0

The Arkham (ARKM) - Audit report identifies 0 issues with varying severity levels, discovered through manual review and static analysis techniques, alongside rigorous code reviews, highlighting the need for further investigation and vulnerability identification.

The smart contract is considered to **pass the audit**, as of the audit date, if no high severity or moderate severity issues are found.



# AUDIT FINDINGS

## Critical Severity

No Critical severity vulnerabilities were found.

## High Severity

No High severity vulnerabilities were found.

## Medium

No Medium severity vulnerabilities were found.

## Low

No Low severity vulnerabilities were found.

## Very Low / Informational / Best practices:

No Very Low severity vulnerabilities were found.



# CENTRALIZATION

This smart contract has some functions that can be executed by the Admin (Owner) only. If the admin wallet's private key is compromised, then it would create trouble. Following are Admin functions:

## ARKM.sol

- pause: The owner can trigger a stop.
- unpause: The owner can return to a normal state.
- mint: Mint a new token by the owner.
- \_authorizeUpgrade: The owner can upgrade to a new implementation.

## OwnableUpgradeable.sol

- renounce Ownership: Deleting ownership will leave the contract without an owner, removing any owner-only functionality.
- transferOwnership: The current owner can transfer ownership of the contract to a new account..

## UpgradeableBeacon.sol

- upgradeTo: Upgrades the beacon to a new implementation by the owner.

## ProxyAdmin.sol

- changeProxyAdmin: Changes the admin of `proxy` to `newAdmin` by the owner.
- upgrade: Upgrades `proxy` to `implementation` by the owner.
- upgradeAndCall: Upgrades `proxy` to `implementation` and calls a function on the new implementation by the owner.



## TransparentUpgradeableProxy.sol

- `admin`: Returns the current admin by the Admin.
- `implementation`: Returns the current implementation by the Admin.
- `changeAdmin`: Changes the admin of the proxy by the Admin.
- `upgradeTo`: Upgrade the implementation of the proxy by the Admin.
- `upgradeToAndCall`: Upgrade the implementation of the proxy, and then call a function from the new implementation as specified by `data`, which should be an encoded function call by the Admin.

## Ownable.sol

- `renounceOwnership`: Deleting ownership will leave the contract without an owner, removing any owner-only functionality.
- `transferOwnership`: The current owner can transfer ownership of the contract to a new account..

To make the smart contract 100% decentralized, we suggest renouncing ownership of the smart contract once its function is completed.



## CONCLUSION

We were given a contract code in the form of Etherscan web links. And we have used all possible tests based on given objects as files. We had not observed any issues in the smart contracts. So, it's good to go for the production.

Since possible test cases can be unlimited for such smart contracts protocol, we provide no such guarantee of future outcomes. We have used all the latest static tools and manual observations to cover maximum possible test cases to scan everything.

Smart contracts within the scope were manually reviewed and analyzed with static analysis tools. Smart Contract's high-level description of functionality was presented in the As-is overview section of the report.

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

Security state of the reviewed smart contract, based on standard audit procedure scope, is **"Secured"**.

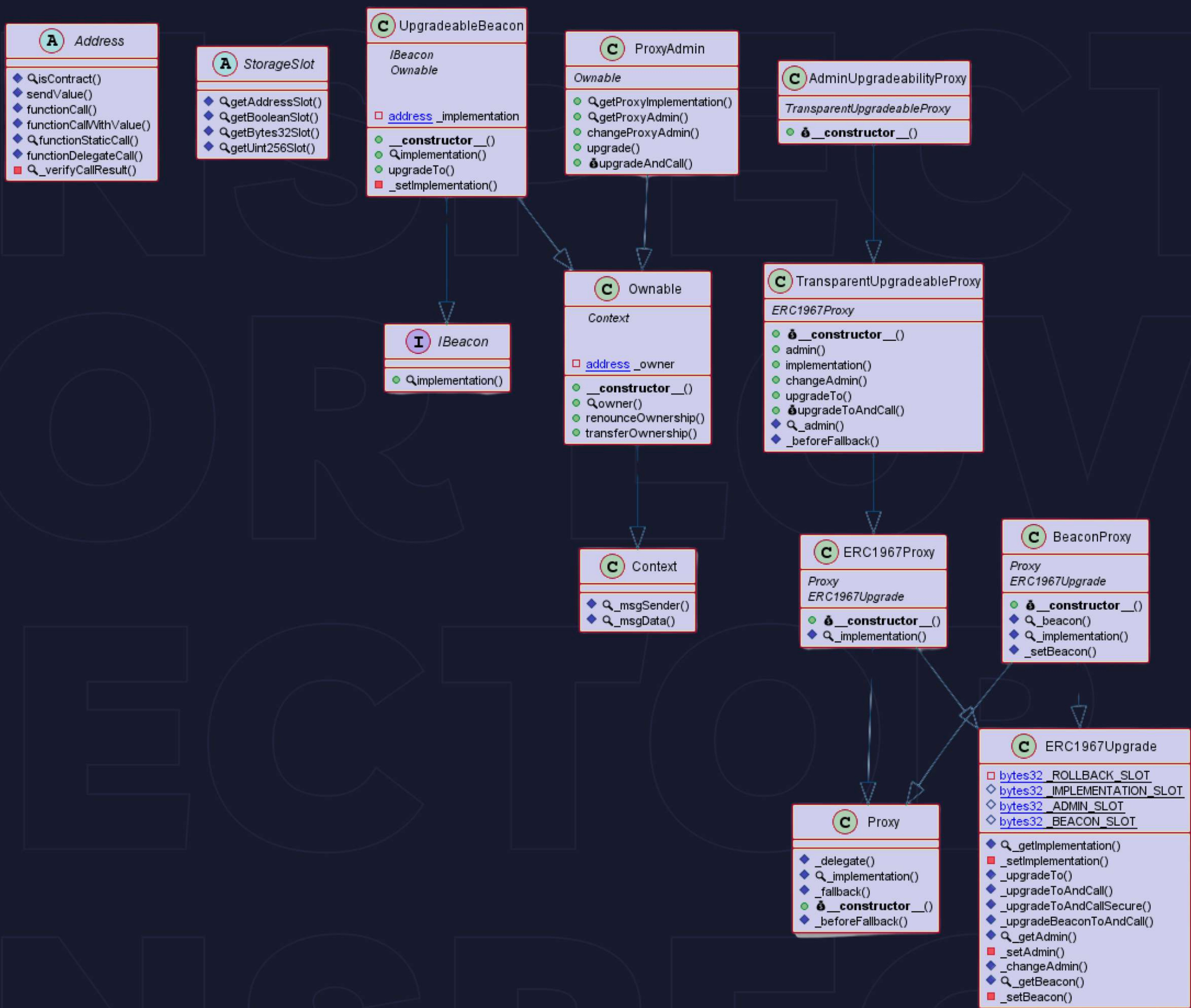




# ADDENDUM

## Code Flow Diagram

### Arkham Token





# SECURITY ASSESSMENT REPORT

Slither is a Solidity static analysis framework that uses vulnerability detectors, displays contract details and provides an API for writing custom analyses. It helps developers identify vulnerabilities, improve code comprehension, and prototype custom analyses quickly. The analysis includes a report with warnings and errors, allowing developers to quickly prototype and fix issues.

We did the analysis of the project together. Below are the results.

## Slither Log >> ERC1967Proxy.sol

```
ERC1967Upgrade._upgradeToAndCall(address,bytes,bool) (ERC1967Proxy.sol#429-435) ignores return value by Address.functionDelegateCall(newImplementation,data) (ERC1967Proxy.sol#433)
ERC1967Upgrade._upgradeToAndCallSecure(address,bytes,bool) (ERC1967Proxy.sol#442-470) ignores return value by Address.functionDelegateCall(newImplementation,data) (ERC1967Proxy.sol#448)
ERC1967Upgrade._upgradeToAndCallSecure(address,bytes,bool) (ERC1967Proxy.sol#442-470) ignores return value by Address.functionDelegateCall(newImplementation,abi.encodeWithSignature(upgradeTo(address),oldImplementation)) (ERC1967Proxy.sol#456-462)
ERC1967Upgrade._upgradeBeaconToAndCall(address,bytes,bool) (ERC1967Proxy.sol#478-484) ignores return value by Address.functionDelegateCall(IBeacon(newBeacon).implementation(),data) (ERC1967Proxy.sol#482)
Reference: https://github.com/crytic/slither/wiki/Detector-Documentation#unused-return

AdminUpgradeabilityProxy.constructor(address,address,bytes).admin (ERC1967Proxy.sol#849) shadows:
- TransparentUpgradeableProxy.admin() (ERC1967Proxy.sol#653-655) (function)
Reference: https://github.com/crytic/slither/wiki/Detector-Documentation#local-variable-shadowing

Modifier TransparentUpgradeableProxy.ifAdmin() (ERC1967Proxy.sol#636-642) does not always execute _; or revertReference: https://github.com/crytic/slither/wiki/Detector-Documentation#incorrect-modifier

Reentrancy in ERC1967Upgrade._upgradeToAndCallSecure(address,bytes,bool) (ERC1967Proxy.sol#442-470):
  External calls:
  - Address.functionDelegateCall(newImplementation,data) (ERC1967Proxy.sol#448)
  - Address.functionDelegateCall(newImplementation,abi.encodeWithSignature(upgradeTo(address),oldImplementation)) (ERC1967Proxy.sol#456-462)
  Event emitted after the call(s):
  - Upgraded(newImplementation) (ERC1967Proxy.sol#468)
Reference: https://github.com/crytic/slither/wiki/Detector-Documentation#reentrancy-vulnerabilities-3
```



```
Address.isContract(address) (PENDLE.sol#26-35) uses assembly
- INLINE ASM (PENDLE.sol#33)
Address.verifyCallResult(bool,bytes,string) (PENDLE.sol#171-188) uses assembly
- INLINE ASM (PENDLE.sol#180-183)
PENDLE.getChainId() (PENDLE.sol#1052-1058) uses assembly
- INLINE ASM (PENDLE.sol#1054-1056)
Reference: https://github.com/crytic/slither/wiki/Detector-Documentation#assembly-usage
```

```
Address.functionCall(address,bytes) (PENDLE.sol#79-81) is never used and should be removed
Address.functionCallWithValue(address,bytes,uint256) (PENDLE.sol#104-106) is never used and should be removed
Address.functionDelegateCall(address,bytes) (PENDLE.sol#153-155) is never used and should be removed
Address.functionDelegateCall(address,bytes,string) (PENDLE.sol#163-169) is never used and should be removed
Address.functionStaticCall(address,bytes) (PENDLE.sol#129-131) is never used and should be removed
Address.functionStaticCall(address,bytes,string) (PENDLE.sol#139-145) is never used and should be removed
Address.sendValue(address,uint256) (PENDLE.sol#53-59) is never used and should be removed
SafeERC20.safeApprove(IERC20,address,uint256) (PENDLE.sol#479-488) is never used and should be removed
SafeERC20.safeDecreaseAllowance(IERC20,address,uint256) (PENDLE.sol#495-498) is never used and should be removed
SafeERC20.safeIncreaseAllowance(IERC20,address,uint256) (PENDLE.sol#490-493) is never used and should be removed
SafeERC20.safeTransferFrom(IERC20,address,address,uint256) (PENDLE.sol#468-470) is never used and should be removed
SafeMath.div(uint256,uint256,string) (PENDLE.sol#434-437) is never used and should be removed
SafeMath.mod(uint256,uint256) (PENDLE.sol#396-399) is never used and should be removed
SafeMath.mod(uint256,uint256,string) (PENDLE.sol#454-457) is never used and should be removed
SafeMath.tryAdd(uint256,uint256) (PENDLE.sol#268-272) is never used and should be removed
SafeMath.tryDiv(uint256,uint256) (PENDLE.sol#304-307) is never used and should be removed
SafeMath.tryMod(uint256,uint256) (PENDLE.sol#314-317) is never used and should be removed
SafeMath.tryMul(uint256,uint256) (PENDLE.sol#289-297) is never used and should be removed
SafeMath.trySub(uint256,uint256) (PENDLE.sol#279-282) is never used and should be removed
Reference: https://github.com/crytic/slither/wiki/Detector-Documentation#dead-code
```

```
Pragma version>=0.6.2<0.8.0 (PENDLE.sol#3) is too complex
Reference: https://github.com/crytic/slither/wiki/Detector-Documentation#incorrect-versions-of-solidity
```

```
Pragma version^0.8.0 (ERC1967Proxy.sol#3) allows old versions
solc-0.8.0 is not recommended for deployment
Reference: https://github.com/crytic/slither/wiki/Detector-Documentation#incorrect-versions-of-solidity
```

```
Low level call in Address.sendValue(address,uint256) (ERC1967Proxy.sol#49-55):
- (success) = recipient.call{value: amount}() (ERC1967Proxy.sol#53)
Low level call in Address.functionCallWithValue(address,bytes,uint256,string) (ERC1967Proxy.sol#110-117):
- (success, returndata) = target.call{value: value}(data) (ERC1967Proxy.sol#115)
Low level call in Address.functionStaticCall(address,bytes,string) (ERC1967Proxy.sol#135-141):
- (success, returndata) = target.staticcall(data) (ERC1967Proxy.sol#139)
Low level call in Address.functionDelegateCall(address,bytes,string) (ERC1967Proxy.sol#159-165):
- (success, returndata) = target.delegatecall(data) (ERC1967Proxy.sol#163)
Low level call in ProxyAdmin.getProxyImplementation(TransparentUpgradeableProxy) (ERC1967Proxy.sol#730-736):
- (success, returndata) = address(proxy).staticcall(0x5c60da1b) (ERC1967Proxy.sol#733)
Low level call in ProxyAdmin.getProxyAdmin(TransparentUpgradeableProxy) (ERC1967Proxy.sol#745-751):
- (success, returndata) = address(proxy).staticcall(0xf851a440) (ERC1967Proxy.sol#748)
Reference: https://github.com/crytic/slither/wiki/Detector-Documentation#low-level-calls
```

```
Redundant expression "this (ERC1967Proxy.sol#256)" inContext (ERC1967Proxy.sol#250-259)
Reference: https://github.com/crytic/slither/wiki/Detector-Documentation#redundant-statements
```

```
Variable UpgradeableBeacon.implementation (ERC1967Proxy.sol#795) is too similar to UpgradeableBeacon.constructor(address).implementation_ (ERC1967Proxy.sol#806)
Reference: https://github.com/crytic/slither/wiki/Detector-Documentation#variable-names-too-similar
ERC1967Proxy.sol analyzed (13 contracts with 84 detectors), 40 result(s) found
```



# SOLIDITY STATIC ANALYSIS

Static code analysis is used to identify many common coding problems before a program is released. It involves examining the code manually or using tools to automate the process. Static code analysis tools can automatically scan the code without executing it.

## ARKM.sol

### Inline assembly:

The Contract uses inline assembly, this is only advised in rare cases. Additionally static analysis modules do not parse inline Assembly, this can lead to wrong analysis results.

[more](#)

Pos: 287:12:

### Low level calls:

Use of "delegatecall": should be avoided whenever possible. External code, that is called can change the state of the calling contract and send ether from the caller's balance. If this is wanted behaviour, use the Solidity library feature if possible.

[more](#)

Pos: 779:50:



### Gas costs:

Gas requirement of function ARKM.mint is infinite: If the gas requirement of a function is higher than the block gas limit, it cannot be executed. Please avoid loops in your functions or actions that modify large areas of storage (this includes clearing or copying arrays in storage)

Pos: 1437:4:

### Gas costs:

Gas requirement of function ARKM.pause is infinite: If the gas requirement of a function is higher than the block gas limit, it cannot be executed. Please avoid loops in your functions or actions that modify large areas of storage (this includes clearing or copying arrays in storage)

Pos: 1429:4:

### Guard conditions:

Use "assert(x)" if you never ever want x to be false, not in any circumstance (apart from a bug in your code). Use "require(x)" if x can be false, due to e.g. invalid input or a failing external component.

[more](#)

Pos: 1313:12:



## ERC1967Proxy.sol

**Inline assembly:**

The Contract uses inline assembly, this is only advised in rare cases. Additionally static analysis modules do not parse inline Assembly, this can lead to wrong analysis results.

[more](#)

Pos: 269:8:

**Low level calls:**

Use of "delegatecall": should be avoided whenever possible. External code, that is called can change the state of the calling contract and send ether from the caller's balance. If this is wanted behaviour, use the Solidity library feature if possible.

[more](#)

Pos: 163:50:

**Gas costs:**

Gas requirement of function TransparentUpgradeableProxy.admin is infinite: If the gas requirement of a function is higher than the block gas limit, it cannot be executed. Please avoid loops in your functions or actions that modify large areas of storage (this includes clearing or copying arrays in storage)

Pos: 653:4:



## ERC1967Proxy.sol

**Gas costs:**

Fallback function of contract AdminUpgradeabilityProxy requires too much gas (infinite). If the fallback function requires more than 2300 gas, the contract cannot receive Ether.

Pos: 309:4:

**Gas costs:**

Fallback function of contract BeaconProxy requires too much gas (infinite). If the fallback function requires more than 2300 gas, the contract cannot receive Ether.

Pos: 309:4:

**Similar variable names:**

UpgradeableBeacon.(address) : Variables have very similar names "\_implementation" and "implementation\_". Note: Modifiers are currently not considered by this static analysis.

Pos: 807:27:

**No return:**

Proxy.\_implementation(): Defines a return type but never explicitly returns a value.

Pos: 293:4:



ERC1967Proxy.sol

### Guard conditions:

Use "assert(x)" if you never ever want x to be false, not in any circumstance (apart from a bug in your code). Use "require(x)" if x can be false, due to e.g. invalid input or a failing external component.

[more](#)

Pos: 749:8:

### Guard conditions:

Use "assert(x)" if you never ever want x to be false, not in any circumstance (apart from a bug in your code). Use "require(x)" if x can be false, due to e.g. invalid input or a failing external component.

[more](#)

Pos: 840:8:



# COMPLIANCE ANALYSIS

Linters are the utility tools that analyze the given source code and report programming errors, bugs, and stylistic errors. For the Solidity language, there are some linter tools available that a developer can use to improve the quality of their Solidity contracts.

## ARKM.sol

```
Compiler version ^0.8.0 does not satisfy the ^0.5.8 semver requirement
Pos: 1:3
Avoid using inline assembly. It is acceptable only in rare cases
Pos: 9:26
Avoid using inline assembly. It is acceptable only in rare cases
Pos: 9:36
Avoid using inline assembly. It is acceptable only in rare cases
Pos: 9:46
Avoid using inline assembly. It is acceptable only in rare cases
Pos: 9:56
Error message for require is too long
Pos: 9:139
Error message for require is too long
Pos: 9:209
Avoid using inline assembly. It is acceptable only in rare cases
Pos: 13:286
Error message for require is too long
Pos: 9:416
Error message for require is too long
Pos: 9:450
Error message for require is too long
Pos: 9:463
Error message for require is too long
Pos: 9:476
Function name must be in mixedCase
Pos: 5:499
Code contains empty blocks
Pos: 57:499
Function name must be in mixedCase
Pos: 5:502
Code contains empty blocks
Pos: 67:502
Function name must be in mixedCase
Pos: 5:528
Function name must be in mixedCase
Pos: 5:532
Error message for require is too long
Pos: 9:574
Function name must be in mixedCase
Pos: 5:597
```



Code contains empty blocks  
Pos: 64:597  
Function name must be in mixedCase  
Pos: 5:600  
Code contains empty blocks  
Pos: 74:600  
Error message for require is too long  
Pos: 9:628  
Error message for require is too long  
Pos: 17:675  
Error message for revert is too long  
Pos: 17:677  
Error message for require is too long  
Pos: 9:706  
Error message for require is too long  
Pos: 9:742  
Error message for require is too long  
Pos: 9:743  
Error message for require is too long  
Pos: 9:775  
Function name must be in mixedCase  
Pos: 5:803  
Code contains empty blocks  
Pos: 65:803  
Function name must be in mixedCase  
Pos: 5:806  
Code contains empty blocks  
Pos: 75:806  
Error message for require is too long  
Pos: 9:819  
Error message for require is too long  
Pos: 9:820  
Error message for require is too long  
Pos: 9:829  
Function name must be in mixedCase  
Pos: 5:915  
Function name must be in mixedCase  
Pos: 5:919  
Function name must be in mixedCase  
Pos: 5:1019  
Function name must be in mixedCase  
Pos: 5:1023  
Error message for require is too long  
Pos: 9:1173  
Error message for require is too long  
Pos: 9:1200  
Error message for require is too long  
Pos: 9:1201  
Error message for require is too long  
Pos: 9:1206  
Error message for require is too long  
Pos: 9:1255  
Error message for require is too long



Pos: 9:1260  
Error message for require is too long  
Pos: 9:1290  
Error message for require is too long  
Pos: 9:1291  
Code contains empty blocks  
Pos: 24:1337  
Code contains empty blocks  
Pos: 24:1357  
Function name must be in mixedCase  
Pos: 5:1373  
Code contains empty blocks  
Pos: 63:1373  
Function name must be in mixedCase  
Pos: 5:1376  
Code contains empty blocks  
Pos: 73:1376  
Explicitly mark visibility in function (Set ignoreConstructors to true if using solidity >=0.7.0)  
Pos: 5:1413  
Visibility modifier must be first in list of modifiers  
Pos: 39:1417  
Code contains empty blocks  
Pos: 5:1452

## ERC1967Proxy.sol

Compiler version ^0.8.0 does not satisfy the ^0.5.8 semver requirement  
Pos: 1:2  
Error message for require is too long  
Pos: 9:53  
Error message for require is too long  
Pos: 9:110  
Error message for require is too long  
Pos: 9:135  
Error message for require is too long  
Pos: 9:159  
Avoid using inline assembly. It is acceptable only in rare cases  
Pos: 9:207  
Avoid using inline assembly. It is acceptable only in rare cases  
Pos: 9:216  
Avoid using inline assembly. It is acceptable only in rare cases  
Pos: 9:225  
Avoid using inline assembly. It is acceptable only in rare cases  
Pos: 9:234  
Code contains empty blocks  
Pos: 49:326  
Explicitly mark visibility in function (Set ignoreConstructors to true if using solidity >=0.7.0)  
Pos: 5:338



Error message for require is too long  
Pos: 9:376  
Error message for require is too long  
Pos: 9:409  
Error message for require is too long  
Pos: 13:464  
Error message for require is too long  
Pos: 9:508  
Error message for require is too long  
Pos: 9:544  
Error message for require is too long  
Pos: 9:548  
Explicitly mark visibility in function (Set ignoreConstructors to true if using solidity >=0.7.0)  
Pos: 5:563  
Explicitly mark visibility in function (Set ignoreConstructors to true if using solidity >=0.7.0)  
Pos: 5:588  
Explicitly mark visibility in function (Set ignoreConstructors to true if using solidity >=0.7.0)  
Pos: 5:627  
Error message for require is too long  
Pos: 9:711  
Provide an error message for require  
Pos: 9:733  
Provide an error message for require  
Pos: 9:748  
Explicitly mark visibility in function (Set ignoreConstructors to true if using solidity >=0.7.0)  
Pos: 5:805  
Error message for require is too long  
Pos: 9:839  
Explicitly mark visibility in function (Set ignoreConstructors to true if using solidity >=0.7.0)  
Pos: 5:848  
Code contains empty blocks  
Pos: 122:848



## SOFTWARE ANALYSIS RESULT

This software reported many false positive results and some are informational issues. So, those issues can be safely ignored.





# INSPECTOR LOVELY

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