



SOLIDProof
Bring trust into your projects

Blockchain Security | Smart Contract Audits | KYC

MADE IN GERMANY

XVMC

Audit

Security Assessment
23. April, 2022

For



Mac&Cheese

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Version	Date	Description
1.0	22. April 2022	<ul style="list-style-type: none">• Layout project• Automated- /Manual-Security Testing• Summary
	23. April 2022	<ul style="list-style-type: none">• Finalised audit

Network

Ethereum (ERC20)

Binance Smart Chain (BEP20)

Website

<https://macncheese.finance/>

Telegram

<https://t.me/goXVMC>

Twitter

https://twitter.com/XVMC_crypto



Description

Mac&Cheese(XVMC) is a decentralized cryptocurrency and is the culmination of 10 years of cryptocurrency innovation and market psychology.

XVMC protocol is a dynamic high-YIELD blockchain time deposit(CD) working as a Decentralized Autonomous Organization (DAO) with a mission-specific design: to create scarcity, attract liquidity and increase it's value.

Project Engagement

During the 19th of April 2022, **XVMC Team** engaged Solidproof.io to audit smart contracts that they created. The engagement was technical in nature and focused on identifying security flaws in the design and implementation of the contracts. They provided Solidproof.io with access to their code repository and whitepaper.

Logo



Mac&Cheese

Contract Link

v1.0

- Github
 - <https://github.com/macNcheeseFinance/XVMC-core/tree/main/contracts>
 - Commit: df66aeffa0eb0526aec8bf18fcd40739342e0665

Vulnerability & Risk Level

Risk represents the probability that a certain source-threat will exploit vulnerability, and the impact of that event on the organization or system. Risk Level is computed based on CVSS version 3.0.

Level	Value	Vulnerability	Risk (Required Action)
Critical	9 - 10	A vulnerability that can disrupt the contract functioning in a number of scenarios, or creates a risk that the contract may be broken.	Immediate action to reduce risk level.
High	7 – 8.9	A vulnerability that affects the desired outcome when using a contract, or provides the opportunity to use a contract in an unintended way.	Implementation of corrective actions as soon as possible.
Medium	4 – 6.9	A vulnerability that could affect the desired outcome of executing the contract in a specific scenario.	Implementation of corrective actions in a certain period.
Low	2 – 3.9	A vulnerability that does not have a significant impact on possible scenarios for the use of the contract and is probably subjective.	Implementation of certain corrective actions or accepting the risk.
Informational	0 – 1.9	A vulnerability that have informational character but is not effecting any of the code.	An observation that does not determine a level of risk

Auditing Strategy and Techniques Applied

Throughout the review process, care was taken to evaluate the repository for security-related issues, code quality, and adherence to specification and best practices. To do so, reviewed line-by-line by our team of expert pentesters and smart contract developers, documenting any issues as there were discovered.

Methodology

The auditing process follows a routine series of steps:

1. Code review that includes the following:
 - i) Review of the specifications, sources, and instructions provided to SolidProof to make sure we understand the size, scope, and functionality of the smart contract.
 - ii) Manual review of code, which is the process of reading source code line-by-line in an attempt to identify potential vulnerabilities.
 - iii) Comparison to specification, which is the process of checking whether the code does what the specifications, sources, and instructions provided to SolidProof describe.
2. Testing and automated analysis that includes the following:
 - i) Test coverage analysis, which is the process of determining whether the test cases are actually covering the code and how much code is exercised when we run those test cases.
 - ii) 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.

Used Code from other Frameworks/Smart Contracts (direct imports)

Imported packages:

Dependency / Import Path	Count
@openzeppelin/contracts/access/Ownable.sol	1
@openzeppelin/contracts/utils/Context.sol	1



Tested Contract Files

This audit covered the following files listed below with a SHA-1 Hash.

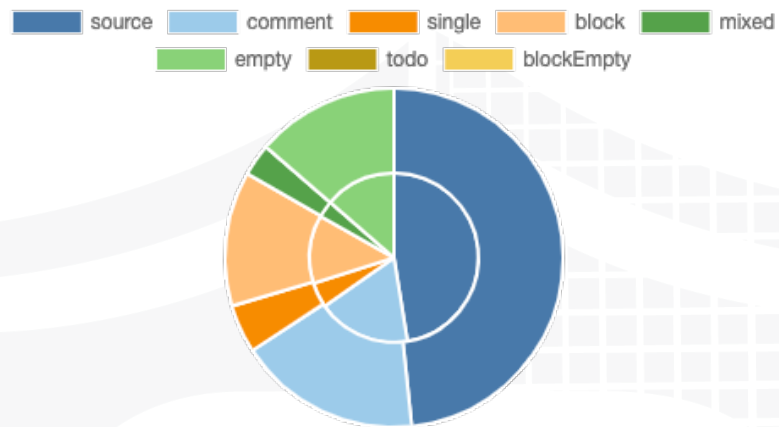
A file with a different Hash has been modified, intentionally or otherwise, after the security review. A different Hash could be (but not necessarily) an indication of a changed condition or potential vulnerability that was not within the scope of this review.

v1.0

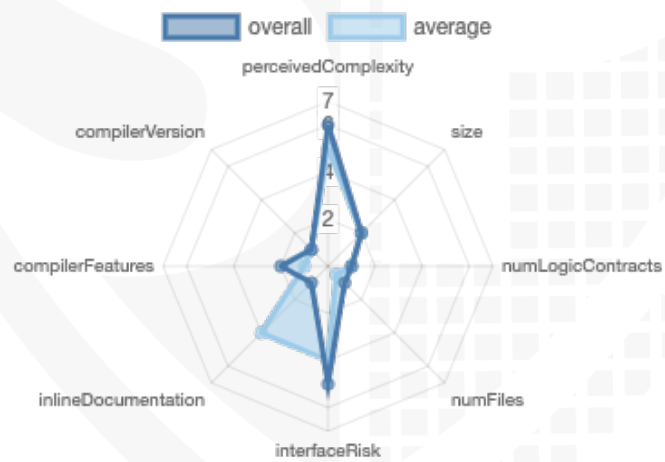
File Name	SHA-1 Hash
contracts/consensus.sol	5345aef414c70e1be1509615e36c641ccaf75709
contracts/1Month.sol	6104faacc2cb485935406011a5e61b685cf23166

Metrics

Source Lines v1.0



Risk Level v1.0



Capabilities

Components

Version	Contracts	Libraries	Interfaces	Abstract
1.0	2	0	7	0

Exposed Functions

This section lists functions that are explicitly declared public or payable. Please note that getter methods for public stateVars are not included.

Version	Public	Payable
1.0	106	0

Version	External	Internal	Private	Pure	View
1.0	93	79	4	0	32

State Variables

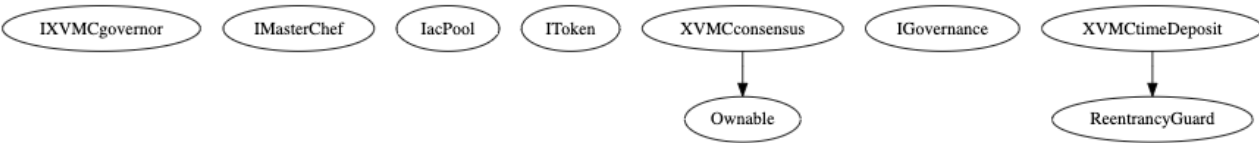
Version	Total	Public
1.0	39	38

Capabilities

Version	Solidity Versions observed	Experimental Features	Can Receive Funds	Uses Assembly	Has Destroyable Contracts
1.0	0.8.0 0.6.12				

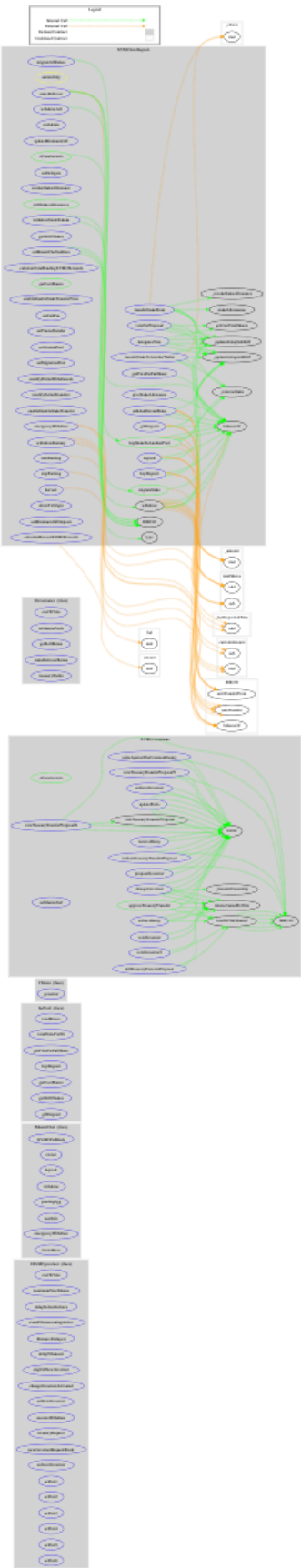
Inheritance Graph

v1.0



CallGraph

v1.0



Scope of Work/Verify Claims

The above token Team provided us with the files that needs to be tested (Github, Bscscan, Etherscan, files, etc.). The scope of the audit is the main contract (usual the same name as team appended with .sol).

We will verify the following claims:

1. Overall checkup (Smart Contract Security)



Write functions of contract v1.0

```
deposit
giftDeposit
addAndExtendStake
withdrawAll
harvest
setAdmin
updateMinimumGift
withdraw
hopStakeToAnotherPool
hopDeposit
stakeRollover
transferStakeToAnotherWallet
voteForProposal
delegateeVote
setDelegate
giveStakeAllowance
revokeStakeAllowance
transferStakeFrom
migrateStake
migrateAllStakes
enableDisableStakeTransferFrom
setCallFee
setTrustedSender
setTrustedPool
setMigrationPool
modifyPartialWithdrawals
modifyPartialTransfers
enableDisableStakeTransfer
emergencyWithdraw
setMasterChefAddress
startEarning
stopEarning
withdrawDummy
allowTxOrigin
setMinimumGiftDeposit
withdrawStuckTokens
```

```
costToVote
maximumVoteTokens
delayBeforeEnforce
eventFibonacceningActive
fibonacciDelayed
delayFibonacci
eligibleNewGovernor
changeGovernorActivated
setNewGovernor
executeWithdraw
treasuryRequest
newGovernorRequestBlock
enforceGovernor
```

Overall checkup (Smart Contract Security)

Tested	Verified
✓	✓

Legend

Attribute	Symbol
Verified / Checked	✓
Partly Verified	⚠
Unverified / Not checked	✗
Not available	—

Modifiers and public functions

v1.0

- deposit
 - Ⓜ nonReentrant
- giftDeposit
 - Ⓜ nonReentrant
- addAndExtendStake
 - Ⓜ nonReentrant
- withdrawAll
- harvest
- setAdmin
- updateMinimumGift
- withdraw
- hopStakeToAnotherPool
- hopDeposit
- stakeRollover
- transferStakeToAnotherWallet
- voteForProposal
- delegateeVote
- setDelegate
- giveStakeAllowance
- revokeStakeAllowance
- transferStakeFrom
- migrateStake
- migrateAllStakes
- enableDisableStakeTransferFrom
 - Ⓜ adminOnly
- setCallFee
 - Ⓜ adminOnly
- setTrustedSender
 - Ⓜ adminOnly
- setTrustedPool
 - Ⓜ adminOnly
- setMigrationPool
 - Ⓜ adminOnly
- modifyPartialWithdrawals
 - Ⓜ adminOnly
- modifyPartialTransfers
 - Ⓜ adminOnly
- enableDisableStakeTransfer
 - Ⓜ adminOnly
- emergencyWithdraw
 - Ⓜ adminOnly
- setMasterChefAddress
 - Ⓜ adminOnly
- startEarning
 - Ⓜ adminOnly
- stopEarning
 - Ⓜ adminOnly
- withdrawDummy
 - Ⓜ adminOnly
- allowTxOrigin
 - Ⓜ adminOnly
- setMinimumGiftDeposit
 - Ⓜ adminOnly
- withdrawStuckTokens
 - Ⓜ adminOnly

- uniteAgainstTheCommonEnemy
- enforceDelay
- removeDelay
- initiateTreasuryTransferProposal
- voteTreasuryTransferProposalY
- voteTreasuryTransferProposalN
- vetoTreasuryTransferProposal
- approveTreasuryTransfer
- killTreasuryTransferProposal
- proposeGovernor
- changeGovernor
- vetoGovernor
- vetoGovernor2
- enforceGovernor
- updatePools
- setMasterchef






Comments

- Deployer can set following state variables without any limitations
 - Pools
 - minimumGift
 - poolID
 - callFee
- Deployer can enable/disable following state variables
 - Pools
 - updateMinGiftGovernor
 - allowOrigin
 - allowStakeTransfer
 - partialTransfers
 - partialWithdrawals
 - trustedPool
 - trustedSender
 - allowStakeTransferFrom
 - Consensus
 - Anyone can set
 - isGovInvalidated[consensusProposal[proposalID].beneficiaryAddress].isInvalidated
- Deployer can set following addresses
 - Pools
 - masterchef
 - migrationPool
 - Consensus
 - Anyone can set
 - masterchef
 - _owner
 - Propose for governor
- onlyAdmin can
 - withdraw
 - Start/stop earning
 - emergencyWithdraw
- In killTreasuryTransferProposal you are checking for !
treasuryProposal[proposalID].valid L306 and set in later to false L314,
but the variable should be false already otherwise it would fail

Please check if an OnlyOwner or similar restrictive modifier has been forgotten.

Source Units in Scope

v1.0

Type	File	Logic Contracts	Interfaces	Lines	nLines	nSLOC	Comment Lines	Complex. Score	Capabilities
	contracts/consensus.sol	1	4	452	417	280	79	328	
	contracts/1Month.sol	1	3	934	906	549	238	526	—————
	Totals	2	7	1386	1323	829	317	854	

Legend

Attribute	Description
Lines	total lines of the source unit
nLines	normalized lines of the source unit (e.g. normalizes functions spanning multiple lines)
nSLOC	normalized source lines of code (only source-code lines; no comments, no blank lines)
Comment Lines	lines containing single or block comments
Complexity Score	a custom complexity score derived from code statements that are known to introduce code complexity (branches, loops, calls, external interfaces, ...)

Audit Results

AUDIT PASSED

Critical issues

No critical issues

High issues

No high issues

Medium issues

No medium issues

Low issues

Issue	File	Type	Line	Description
#1	Consensus	Missing Zero Address Validation (missing-zero-check)	102	Check that the address is not zero
#2	Pools	Missing Zero Address Validation (missing-zero-check)	134, 135, 799	Check that the address is not zero
#3	Pools	Missing Events Arithmetic	770, 833, 877	Emit an event for critical parameter changes

Informational issues

Issue	File	Type	Line	Description
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#1	Consensus	Misspelling	See description	<p>Change following words:</p> <ul style="list-style-type: none"> - Atleast L161, L334 - atleast L200 - delaybeforeenforce L223 - weigted L282, L311 - succesfull K338 - cacle L372 - canceled L383 - accross L428 <p>Make sure to change it everywhere else as well.</p>
#2	Pools	Misspelling	See description	<p>Change following words:</p> <ul style="list-style-type: none"> - latdeposittime L76 - mandatorytime L76 - lastdeposit L574 <p>Make sure to change it everywhere else as well.</p>
#3	Main	NatSpec documentation missing	-	If you started to comment your code, also comment all other functions, variables etc.
#4	All	Start in same form	See description	Contract is permanently changing from upper case to lower case and back for every require statement error message at the beginning
#5	All	documentation	See description	<p>Some documentation description starts with /* and the others with /**.</p> <p>Example 1Month.sol L534 and L563</p> <p>Use the same form permanently to keep the documentation consistent.</p>

#6	All	Layout ordering	See description	<p>The layout ordering is not consistent. Follow here the solidity documentation for the layout order.</p> <ul style="list-style-type: none"> • constructor • receive function (if exists) • fallback function (if exists) • external • public • internal • private <p>For more information read https://docs.soliditylang.org/en/v0.8.13/style-guide.html?highlight=layout#order-of-functions</p>
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Audit Comments

We recommend you to use the special form of comments (NatSpec Format, Follow link for more information <https://docs.soliditylang.org/en/v0.5.10/natspec-format.html>) for your contracts to provide rich documentation for functions, return variables and more. This helps investors to make clear what that variables, functions etc. do.

23. April 2022:

- Read whole report for more information

SWC Attacks

ID	Title	Relationships	Status
SW C-1 36	Unencrypted Private Data On-Chain	CWE-767: Access to Critical Private Variable via Public Method	PASSED
SW C-1 35	Code With No Effects	CWE-1164: Irrelevant Code	PASSED
SW C-1 34	Message call with hardcoded gas amount	CWE-655: Improper Initialization	PASSED
SW C-1 33	Hash Collisions With Multiple Variable Length Arguments	CWE-294: Authentication Bypass by Capture-replay	PASSED
SW C-1 32	Unexpected Ether balance	CWE-667: Improper Locking	PASSED
SW C-1 31	Presence of unused variables	CWE-1164: Irrelevant Code	PASSED
SW C-1 30	Right-To-Left-Override control character (U+202E)	CWE-451: User Interface (UI) Misrepresentation of Critical Information	PASSED
SW C-1 29	Typographical Error	CWE-480: Use of Incorrect Operator	PASSED
SW C-1 28	DoS With Block Gas Limit	CWE-400: Uncontrolled Resource Consumption	PASSED

SW C-1 27	Arbitrary Jump with Function Type Variable	CWE-695: Use of Low-Level Functionality	PASSED
SW C-1 25	Incorrect Inheritance Order	CWE-696: Incorrect Behavior Order	PASSED
SW C-1 24	Write to Arbitrary Storage Location	CWE-123: Write-what-where Condition	PASSED
SW C-1 23	Requirement Violation	CWE-573: Improper Following of Specification by Caller	PASSED
SW C-1 22	Lack of Proper Signature Verification	CWE-345: Insufficient Verification of Data Authenticity	PASSED
SW C-1 21	Missing Protection against Signature Replay Attacks	CWE-347: Improper Verification of Cryptographic Signature	PASSED
SW C-1 20	Weak Sources of Randomness from Chain Attributes	CWE-330: Use of Insufficiently Random Values	PASSED
SW C-11 9	Shadowing State Variables	CWE-710: Improper Adherence to Coding Standards	PASSED
SW C-11 8	Incorrect Constructor Name	CWE-665: Improper Initialization	PASSED
SW C-11 7	Signature Malleability	CWE-347: Improper Verification of Cryptographic Signature	PASSED

SW C-11 6	Timestamp Dependence	CWE-829: Inclusion of Functionality from Untrusted Control Sphere	PASSED
SW C-11 5	Authorization through tx.origin	CWE-477: Use of Obsolete Function	PASSED
SW C-11 4	Transaction Order Dependence	CWE-362: Concurrent Execution using Shared Resource with Improper Synchronization ('Race Condition')	PASSED
SW C-11 3	DoS with Failed Call	CWE-703: Improper Check or Handling of Exceptional Conditions	PASSED
SW C-11 2	Delegatecall to Untrusted Callee	CWE-829: Inclusion of Functionality from Untrusted Control Sphere	PASSED
SW C-11 1	Use of Deprecated Solidity Functions	CWE-477: Use of Obsolete Function	PASSED
SW C-11 0	Assert Violation	CWE-670: Always-Incorrect Control Flow Implementation	PASSED
SW C-1 09	Uninitialized Storage Pointer	CWE-824: Access of Uninitialized Pointer	PASSED
SW C-1 08	State Variable Default Visibility	CWE-710: Improper Adherence to Coding Standards	PASSED
SW C-1 07	Reentrancy	CWE-841: Improper Enforcement of Behavioral Workflow	PASSED
SW C-1 06	Unprotected SELFDESTRUCT Instruction	CWE-284: Improper Access Control	PASSED

SW C-1 05	Unprotected Ether Withdrawal	CWE-284: Improper Access Control	PASSED
SW C-1 04	Unchecked Call Return Value	CWE-252: Unchecked Return Value	PASSED
SW C-1 03	Floating Pragma	CWE-664: Improper Control of a Resource Through its Lifetime	PASSED
SW C-1 02	Outdated Compiler Version	CWE-937: Using Components with Known Vulnerabilities	PASSED
SW C-1 01	Integer Overflow and Underflow	CWE-682: Incorrect Calculation	PASSED
SW C-1 00	Function Default Visibility	CWE-710: Improper Adherence to Coding Standards	PASSED

The logo features the word "SolidProof" in a white, elegant script font. The "P" is particularly large and stylized, with a long horizontal stroke that extends to the left. The background is a solid blue color with a faint, large shield emblem. The shield has a grid-like pattern on its right side and a solid blue area on its left side.

SolidProof

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A small horizontal bar representing the German flag, with black, red, and gold stripes.

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