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Blockchain Security | Smart Contract Audits | KYC

MADE IN GERMANY

MusicY Audit

Security Assessment
04. April, 2022

For



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Version	Date	Description
1.0	16. February 2022	<ul style="list-style-type: none">• Layout project• Automated- /Manual-Security Testing• Summary
1.1	19. February 2022	<ul style="list-style-type: none">• Reaudit
1.2	21. February 2022	<ul style="list-style-type: none">• Reaudit
1.3	04. April 2022	<ul style="list-style-type: none">• Reaudit

Network

Ethereum (ERC20)

Website

<https://music.y.org/>

Telegram

https://t.me/MusicY_DAO

Twitter

<https://twitter.com/MusicYDao>

Medium

<https://medium.com/@MusicYDAO>

Discord

<https://discord.gg/ZSFcYfvjSg>

Description

MusicY DAO foundation enables the funds flow freely driven by smart contracts without the intervention of real-world supervision, so as to facilitate complete decentralized governance

Project Engagement

During the 02nd of April 2022, **MusicY 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



Contract Link

v1.0

- Provided as files

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-upgradeable/access/OwnableUpgradeable.sol	3
@openzeppelin/contracts-upgradeable/security/ReentrancyGuardUpgradeable.sol	3
@openzeppelin/contracts-upgradeable/token/ERC1155/extensions/ERC1155BurnableUpgradeable.sol	1
@openzeppelin/contracts-upgradeable/token/ERC20/ERC20Upgradeable.sol	1
@openzeppelin/contracts-upgradeable/token/ERC20/IERC20Upgradeable.sol	2
@openzeppelin/contracts-upgradeable/token/ERC20/utils/SafeERC20Upgradeable.sol	2
@openzeppelin/contracts/access/Ownable.sol	1
@openzeppelin/contracts/token/ERC20/ERC20.sol	1
@openzeppelin/contracts/utils/Strings.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/MUSIC20.sol	e806479f765b6c5c2af273f79a60f5bc92c2cacf
contracts/ERC1155Asset.sol	10dedb6f9652e0d571916c6d219e8a9e72c049d9
contracts/PTokenClaim.sol	bb105550eab589ac7b5c4be7d45221b775723c0f
contracts/library/SafeMathExt.sol	cce12a4574ff927e09df8a4480220664565364a6
contracts/library/TokenIdentifiers.sol	f1efaa65739f390b4f3201777bb4b048a6f36422
contracts/Gov.sol	147247934839a51cfa63d14cfe8d2e212b3cfdfb
contracts/ProxyRegistry.sol	0b21a13b43324cea5bf6f2eb486c11a9f241965c

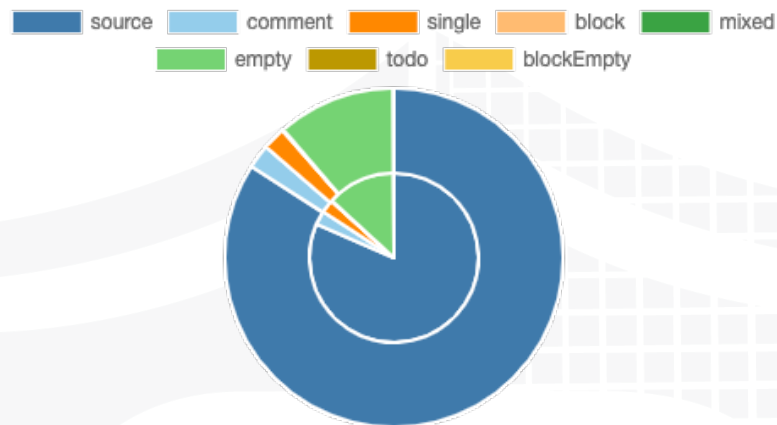
V1.3



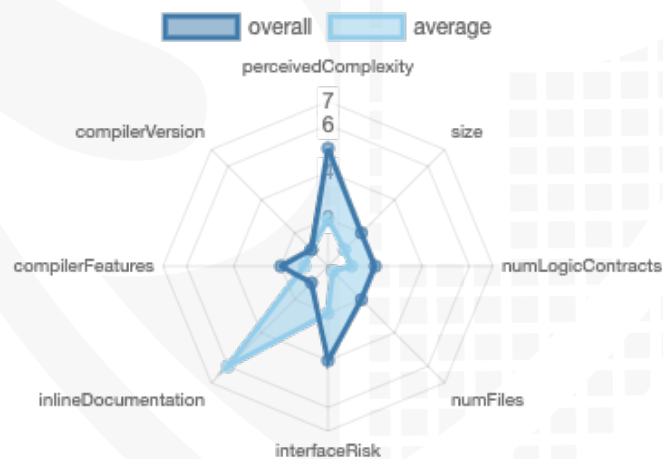
File Name	SHA-1 Hash
contracts/MUSIC20.sol	f6af5c1c85cb08cec742f5af235e1545b0955d87
contracts/deps/ProxyRegistry.sol	0b21a13b43324cea5bf6f2eb486c11a9f241965c
contracts/ERC1155Asset.sol	852050cb6602d5412b1baae3afc74aa8d070407e
contracts/library/SafeMathExt.sol	cce12a4574ff927e09df8a4480220664565364a6
contracts/library/TokenIdentifiers.sol	d7f0a02bb3a645496d9e7516abcd0b083546bd86
contracts/PTokenClaim.sol	07b9b0c5deca48e02043d42fde782e60af719a52
contracts/Gov.sol	7468585761ec2aa0ce9e78d159cb53a4006b3b80

Metrics

Source Lines v1.0



Risk Level v1.0



Capabilities

Components

Version	Contracts	Libraries	Interfaces	Abstract
1.0	6	2	1	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	42	0

Version	External	Internal	Private	Pure	View
1.0	22	67	0	14	16
1.3	22	68	0	15	16

State Variables

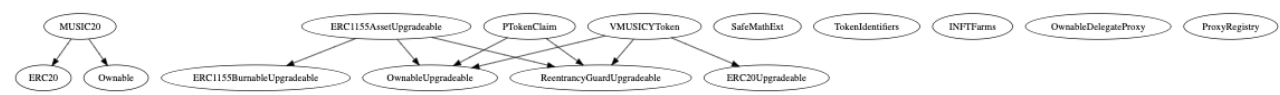
Version	Total	Public
1.0	39	28
1.3	38	32

Capabilities

Version	Solidity Versions observed	Experimental Features	Can Receive Funds	Uses Assembly	Has Destroyable Contracts
1.0	0.8.4 ^0.8.0				

Inheritance Graph

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. Deployer cannot mint any new tokens
2. Deployer cannot burn or lock user funds
3. Deployer cannot pause the contract
4. Overall checkup (Smart Contract Security)



Write functions of contract v1.0

changeEndTime	approve	approve	batchMint
changeStartTime	decreaseAllow...	decreaseAllow...	burn
claim	increaseAllow...	deposit	burnBatch
initialize	renounceOwn...	getReward	create
renounceOwnership	setOpenTransf...	increaseAllow...	initialize
setClaimAmount	setTransferBla...	initialize	mint
setClaimToken	setTransferWh...	renounceOwn...	renounceOwn...
transferOwnership	transfer	setNFTFarms	safeBatchTran...
	transferFrom	setMYTToken	safeTransferFr...
	transferOwner...	setRewardStar...	setApprovalFo...
		transfer	setCreatorForl...
		transferFrom	setManagers
		transferToken	setMusicians
		transferOwner...	setOpenTime
		withdraw	setProxyRegis...
			setTemplateURI
			setURI
			transferOwner...

Deployer cannot mint any new tokens

Name	Exist	Tested	Status
Deployer cannot mint	✓	✓	✗

Comments:

v1.0

- Deployer can set initialAmount/remainingAmount for a certain address with setClaimAmount
- Following roles can mint new tokens
 - creator
 - Proxy

Deployer cannot burn or lock user funds

Name	Exist	Tested	Status
Deployer cannot lock	✓	✓	✗
Deployer cannot burn	✓	✓	✗

Comments:

v1.0

- Owner can set claimEndTime to the current timestamp (higher than claimBeginTime) to lock claim function
- Owner can set new initialAmount/RemainingAmount for addresses with setClaimAmount function
- Everbody can burn tokens
- Developer can lock by
 - Setting transferBlackMap

Deployer cannot pause the contract

Name	Exist	Tested	Status
Deployer cannot pause	—	—	—



Overall checkup (Smart Contract Security)

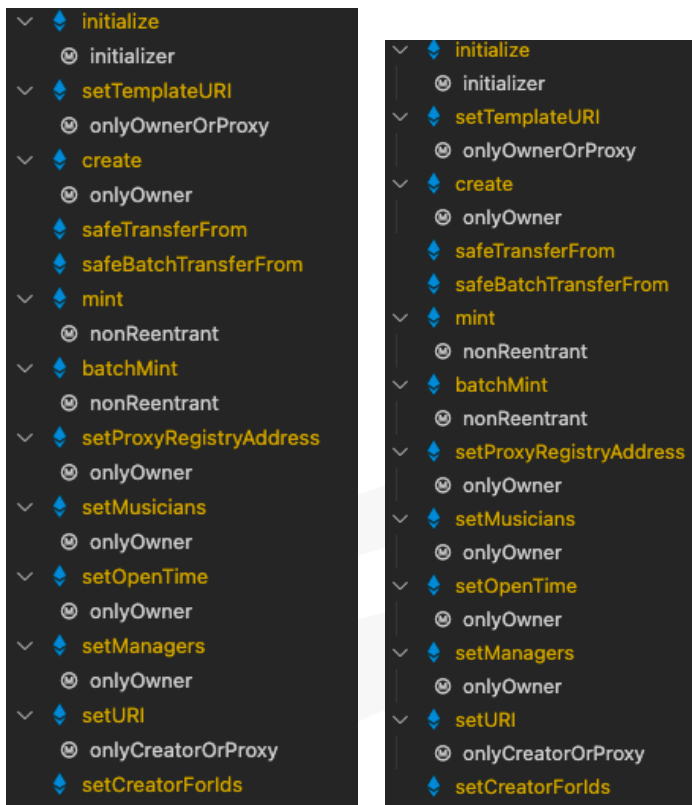
Tested	Verified
✓	✓

Legend

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

Modifiers and public functions v1.0

▼ initialize Ⓜ initializer	▼ initialize Ⓜ initializer	
▼ setClaimToken Ⓜ onlyOwner	▼ setINFTFarms Ⓜ onlyOwner	
▼ changeStartTime Ⓜ onlyOwner	▼ setMYTToken Ⓜ onlyOwner	
▼ changeEndTime Ⓜ onlyOwner	▼ setRewardStartHeight Ⓜ onlyOwner	
▼ setClaimAmount Ⓜ onlyOwner	▼ transferToken Ⓜ onlyOwner	
▼ claim Ⓜ nonReentrant Ⓜ onlyEOA Ⓜ inClaimTime	▼ deposit Ⓜ onlyEOA Ⓜ nonReentrant	
	▼ withdraw Ⓜ onlyEOA Ⓜ nonReentrant	
	▼ getReward Ⓜ onlyEOA Ⓜ nonReentrant	
		▼ setTransferWhiteMap Ⓜ onlyOwner
		▼ setTransferBlackMap Ⓜ onlyOwner
		▼ setOpenTransferTime Ⓜ onlyOwner













Comments

- Deployer can set following state variables without any limitations
 - claimBeginTime
 - claimEndTime
 - templateURI
 - idCreators
 - _tokenURI
 - currentSupply
 - openMintTime
 - _tokenURI
 - openTransferTime
 - rewardStartHeight
- Deployer can enable/disable state variables without any limitations
 - managers
 - transferWhiteMap
 - transferBlackMap
- Deployer can set following addresses
 - claimToken
 - proxyRegistryAddress
 - musiciansWhiteList
 - myINFTFarms











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/MUSIC20.sol	1	————	77	67	56	2	38	————
	contracts/ERC1155Asset.sol	1	————	381	295	241	11	184	————
	contracts/PTokenClaim.sol	1	————	126	115	99	2	68	————
	contracts/library/SafeMathExt.sol	1	————	63	63	48	1	15	————
	contracts/library/TokenIdentifiers.sol	1	————	29	29	21	3	15	————
	contracts/Gov.sol	1	1	301	263	235	2	138	————
	contracts/ProxyRegistry.sol	2	————	9	9	5	2	3	
	Totals	8	1	986	841	705	23	461	

v1.3

Type	File	Logic Contracts	Interfaces	Lines	nLines	nSLOC	Comment Lines	Complex. Score	Capabilities
	contracts/MUSIC20.sol	1	————	76	66	56	1	38	————
	contracts/deps/ProxyRegistry.sol	2	————	9	9	5	2	3	
	contracts/ERC1155Asset.sol	1	————	393	304	250	11	192	————
	contracts/library/SafeMathExt.sol	1	————	63	63	48	1	15	————
	contracts/library/TokenIdentifiers.sol	1	————	51	51	38	6	32	————
	contracts/PTokenClaim.sol	1	————	126	115	99	2	68	————
	contracts/Gov.sol	1	1	306	268	240	2	141	————
	Totals	8	1	1024	876	736	25	489	

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

No low issues

Informational issues

Issue	File	Type	Line	Description
-------	------	------	------	-------------

#1	Gov	Unused variable	78-84	<p>Unused variables in following code:</p> <pre>function _transfer(address sender, address recipient, uint256 amount) internal virtual override { revert("VMY can ont transfer"); }</pre> <p>If you are not going to use these variables you can remove the variable name and leave the types. Remove only the red marked variable names to solve it.</p>
----	-----	-----------------	-------	---

#2	MUSIC20	Unused variable	59-75	<p>Same as above here:</p> <pre> function _beforeTokenTransfer(address from, address to, uint256 amount) internal virtual override { if (openTransferTime > block.timestamp && (! transferWhiteMap[from] && ! transferWhiteMap[to])) { revert("MUSIC20#_beforeTokenTransfer: please wait until the openTransferTime"); } if (transferBlackMap[from] transferBlackMap[to]) { revert("MUSIC20#_beforeTokenTransfer: transfer is forbidden"); } } </pre>
#3	Gov	Formatting	214-216, 260-262	Format simple operations in one single line

Commented Code exist

There are some instances of code being commented out in the following files that should be removed:

File	Line	Comment
TokenIdentifiers	5	// uint8 constant ADDRESS_BITS = 160;

Recommendation

Remove the commented code, or address them properly.

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.

16. February 2022:

- Read whole report for more information

21. February 2022:

- Reaudit

04. April 2022:

- Reaudit
- 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 words "SolidProof" in a white, handwritten-style script. The "P" is 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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