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# SMART CONTRACT

# **Security Audit Report**

Project:Edov NFT ProtocolWebsite:https://edoverse.io/Platform:EthereumLanguage:SolidityDate:September 24th, 2022

# **Table of contents**

Introduction 4
Project Background4
Audit Scope 4
Claimed Smart Contract Features 5
Audit Summary 6
Technical Quick Stats 7
Code Quality 8
Documentation8
Use of Dependencies
AS-IS overview
Severity Definitions 11
Audit Findings 12
Conclusion 16
Our Methodology 17
Disclaimers 19
Appendix
Code Flow Diagram 20
Slither Results Log
Solidity static analysis
Solhint Linter

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# Introduction

EtherAuthority was contracted by Edov NFT protocol to perform the Security audit of the Edov NFT protocol smart contracts code. The audit has been performed using manual analysis as well as using automated software tools. This report presents all the findings regarding the audit performed on September 24th, 2022.

### The purpose of this audit was to address the following:

- Ensure that all claimed functions exist and function correctly.
- Identify any security vulnerabilities that may be present in the smart contract.

# **Project Background**

Edov NFT is an NFT marketplace smart contract in which users can list/unlist their NFT, buy NFT by giving ERC20 tokens, etc. Edov NFT contract inherits IERC721, IERC721Receiver, IERC20, SafeMath, OwnableUpgradeable, Initializable standard smart contracts from the OpenZeppelin library. These OpenZeppelin contracts are considered community audited and time tested, and hence are not part of the audit scope.

# Audit scope

Name	Code Review and Security Analysis Report for Edov NFT Protocol Smart Contracts		
Platform	Ethereum / Solidity		
File 1	EdoMarketplace.sol		
File 1 MD5 Hash	8DBDEFA1FA11CEDD76F7339AC7B8EA47		
Updated File 1 MD5 Hash	269D5D163EC08D1454347A508E478BE4		
File 2	EdoMarketplaceManagement.sol		
File 2 MD5 Hash	49864F564787FFCC543A2B672BD0C8D1		
File 3	EdoMarketplaceManagementAdmin.sol		
File 3 MD5 Hash	F7CA96695EB28A927E4A72BD336D5339		
Updated File 3 MD5 Hash	1B0027A01C3B91F52D97E37BEA935D21		
Audit Date	September 24th, 2022		

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# **Claimed Smart Contract Features**

Claimed Feature Detail	Our Observation
<ul> <li>File 1 EdoMarketplace.sol</li> <li>EdoMarketplace can list NFT contract addresses.</li> <li>EdoMarketplace owners can cancel trade.</li> <li>EdoMarketplace can provide NFT information.</li> <li>EdoMarketplace can provide listings for Edo NFT.</li> </ul>	YES, This is valid.
<ul> <li>File 2 EdoMarketplaceManagement.sol</li> <li>Minimum Fee Rate: 1%</li> <li>Maximum Fee Rate: 10%</li> <li>Non Agent Fee: 5%</li> <li>Demominator: 100</li> <li>EdoMarketplaceManagement can set service fee rates.</li> <li>EdoMarketplaceManagement owner can deposit fee amount.</li> <li>EdoMarketplaceManagement owner can withdraw a token from the payment contract address.</li> </ul>	YES, This is valid.
<ul> <li>File 3 EdoMarketplaceManagementAdmin.sol</li> <li>EdoMarketplaceManagementAdmin owners can set deposit addresses, agent addresses, Edo verse foundation addresses, Edo verselnc addresses.</li> <li>EdoMarketplaceManagementAdmin owners can set fee rate distribution.</li> </ul>	YES, This is valid.

# **Audit Summary**

According to the standard audit assessment, Customer's solidity smart contracts are **"Secured"**. Also, these contracts do 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 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, 1 high, 1 medium and 1 low and some very low level issues. All the issues have been resolved in the revised code.

**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.

# **Technical Quick Stats**

Main Category	Subcategory	Result
Contract	Solidity version not specified	Passed
Programming	Solidity version too old	Passed
	Integer overflow/underflow	Passed
	Function input parameters lack of 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
Code	Function visibility not explicitly declared	Passed
Specification	Var. storage location not explicitly declared	Passed
	Use keywords/functions to be deprecated	Passed
	Unused code	Passed
Gas Optimization	"Out of Gas" Issue	Passed
	High consumption 'for/while' loop	Passed
	High consumption 'storage' storage	Passed
	Assert() misuse	Passed
Business Risk	The maximum limit for mintage not set	Passed
	"Short Address" Attack	Passed
	"Double Spend" Attack	Passed

**Overall Audit Result: PASSED** 

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# **Code Quality**

This audit scope has 3 smart contract files. Smart contracts contain Libraries, Smart contracts, inherits and Interfaces. This is a compact and well written smart contract.

The libraries in Edov NFT Protocol 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 Edov NFT Protocol.

The Edov NFT team has provided unit test scripts, which would have helped to determine the integrity of the code in an automated way.

All code parts are not well commented on smart contracts.

# Documentation

We were given a Edov NFT smart contract code in the form of a file. The hash of that code is mentioned above in the table.

As mentioned above, code parts are not well commented. but 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 <u>https://edoverse.io/</u> which provided rich information about the project architecture.

# **Use of Dependencies**

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

Apart from libraries, its functions are used in external smart contract calls.

# **AS-IS** overview

# EdoMarketplace.sol

### Functions

SI.	Functions	Туре	Observation	Conclusion
1	constructor	write	Passed	No Issue
2	onlyEdoNft	modifier	Passed	No Issue
3	onlyNftOwner	modifier	Passed	No Issue
4	initialize	write	Passed	No Issue
5	approveErc20	external	Passed	No Issue
6	approveErc721	external	Passed	No Issue
7	setListingNFT	write	access only Edo Nft	No Issue
8	buyEdoNFT	write	access only Edo Nft	No Issue
9	cancelTrade	write	access only Nft Owner	No Issue
10	getEdoNFTInfo	write	access only Edo Nft	No Issue
11	getListingEdoNfts	read	Passed	No Issue
12	getHash	write	Passed	No Issue
13	_setNftMeta	internal	Passed	No Issue
14	onlyAgent	modifier	Passed	No Issue
15	feeLimit	modifier	Passed	No Issue
16	setAgentRefundAddress	external	access only Agent	No Issue
17	setServiceFeeRate	write	Passed	No Issue
18	depositFeeAmount	external	access only Owner	No Issue
19	withdraw	external	access only Owner	No Issue

# EdoMarketplaceManagement.sol

### Functions

SI.	Functions	Туре	Observation	Conclusion
1	constructor	write	Passed	No Issue
2	onlyAgent	modifier	Passed	No Issue
3	feeLimit	modifier	Passed	No Issue
4	setAgentRefundAddress	external	access only Agent	No Issue
5	setServiceFeeRate	write	Passed	No Issue
6	depositFeeAmount	external	access only Owner	No Issue
7	withdraw	external	access only Owner	No Issue
8	setDepositAddress	external	access only Owner	No Issue
9	setAgentAddress	external	access only Owner	No Issue
10	setEdoVerseFoundationA	external	access only Owner	No Issue
	ddress			
11	setEdoVerseIncAddress	external	access only Owner	No Issue
12	includeNFTContractAddr	external	access only Owner	No Issue
	ess			
13	excludeNFTContractAddr	external	access only Owner	No Issue
	ess			

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14	isApprovedNFTContractA ddress	external	access only Owner	No Issue
15	includePaymentContract Address	external	access only Owner	No Issue
16	excludePaymentContract Address	external	access only Owner	No Issue
17	isApprovedPaymentContr actAddress	external	access only Owner	No Issue
18	setFeeRateDistribution	external	access only Owner	No Issue

# EdoMarketplaceManagementAdmin.sol

### Functions

SI.	Functions	Туре	Observation	Conclusion
1	constructor	write	Passed	No Issue
2	setDepositAddress	external	access only Owner	No Issue
3	setAgentAddress	external	access only Owner	No Issue
4	setEdoVerseFoundationA ddress	external	access only Owner	No Issue
5	setEdoVerseIncAddress	external	access only Owner	No Issue
6	includeNFTContractAddr ess	external	access only Owner	No Issue
7	excludeNFTContractAddr ess	external	access only Owner	No Issue
8	isApprovedNFTContractA ddress	external	access only Owner	No Issue
9	includePaymentContract Address	external	access only Owner	No Issue
10	excludePaymentContract Address	external	access only Owner	No Issue
11	isApprovedPaymentContr actAddress	external	access only Owner	No Issue
12	setFeeRateDistribution	external	access only Owner	No Issue
13	Ownable_init	internal	access only Initializing	No Issue
14	Ownable_init_unchain ed	internal	access only Initializing	No Issue
15	onlyOwner	modifier	Passed	No Issue
16	owner	read	Passed	No Issue
17	_checkOwner	internal	Passed	No Issue
18	renounceOwnership	write	access only Owner	No Issue
19	transferOwnership	write	access only Owner	No Issue
20	transferOwnership	internal	Passed	No Issue

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# **Severity Definitions**

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
Medium	Medium-level vulnerabilities are important to fix; however, they can't lead to tokens loss
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.

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# **Audit Findings**

### **Critical Severity**

No Critical severity vulnerabilities were found.

### **High Severity**

(1) Wrong TotalFee calculation: EdoMarketplaceManagementAdmin.sol



In the setFeeRateDistribution function, totalFeeRate is validated for the global variables which have been set while initialization. In case the admin has set wrong fees, totaling greater than 100, then admin cannot change fees again.

**Resolution**: We suggest using the input parameters for totaling and validation equal to 100 before setting the variables.

Status: Fixed.

### Medium

(1) Irrelevant token standard and method: EdoMarketplace.sol

In the approveErc20 function, paymentContractAddress is IERC721 token standard and the approved method has the amount as the second parameter which is irrelevant. IERC721 should have TokenId as the second parameter.

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**Resolution**: We suggest either to change the tokenStandard from IERC721 to IERC20 Or change the approved method's second parameter from amount to tokenId. **Status:** Fixed.

### Low

(1) Function input parameters lack of check: EdoMarketplaceManagementAdmin.sol

Variable validation is not performed in below functions:

• setDepositAddress = \_depositAddress.

**Resolution**: We advise to put validation: int type variables should not be empty and > 0 & address type variables should not be address(0). **Status:** Fixed.

### Very Low / Informational / Best practices:

(1) Unused variable: EdoMarketplaceManagement.sol

NON\_AGENT\_FEE is defined as constant but not used anywhere.

Resolution: We suggest removing unused variables.

# Centralization

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

- cancelTrade: EdoMarketplace owner can cancel trade.
- setAgentRefundAddress: EdoMarketplaceManagement agent owner can set agent refund address.
- setServiceFeeRate: EdoMarketplaceManagement agent owner can set service fee rate values.

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- depositFeeAmount: EdoMarketplaceManagement owner can deposit fee amount.
- setDepositAddress: EdoMarketplaceManagementAdmin owner can set deposit address.
- setAgentAddress: EdoMarketplaceManagementAdmin owner can set agent address.
- setEdoVerseFoundationAddress: EdoMarketplaceManagementAdmin owner can set edo verse foundation address.
- setEdoVerseIncAddress: EdoMarketplaceManagementAdmin owner can set edo verse Inc address.
- includeNFTContractAddress: EdoMarketplaceManagementAdmin owner can include NFT contract address.
- excludeNFTContractAddress: EdoMarketplaceManagementAdmin owner can exclude NFT contract address.
- isApprovedNFTContractAddress: EdoMarketplaceManagementAdmin owner can set issapproved NFT contract address.
- includePaymentContractAddress: EdoMarketplaceManagementAdmin owner can include payment contract address.
- excludePaymentContractAddress: EdoMarketplaceManagementAdmin owner can exclude payment contract address.
- isApprovedPaymentContractAddress: EdoMarketplaceManagementAdmin owner can set approved payment contract address.
- setFeeRateDistribution: EdoMarketplaceManagementAdmin owner can set fee rate distribution value.

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

# Conclusion

We were given a contract code in the form of a file. And we have used all possible tests based on given objects as files. We have observed 1 high severity issue, 1 medium severity issue,1 low severity issue and some very low level issue in smart contracts. All the issues have been fixed in the revised code. So smart contracts are ready for mainnet deployment.

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 contract, based on standard audit procedure scope, is **"Secure".** 

# **Our Methodology**

We like to work with a transparent process and make our reviews a collaborative effort. The goals of our security audits are to improve the quality of systems we review and aim for sufficient remediation to help protect users. The following is the methodology we use in our security audit process.

#### Manual Code Review:

In manually reviewing all of the code, we look for any potential issues with code logic, error handling, protocol and header parsing, cryptographic errors, and random number generators. We also watch for areas where more defensive programming could reduce the risk of future mistakes and speed up future audits. Although our primary focus is on the in-scope code, we examine dependency code and behavior when it is relevant to a particular line of investigation.

#### Vulnerability Analysis:

Our audit techniques included manual code analysis, user interface interaction, and whitebox penetration testing. We look at the project's web site to get a high level understanding of what functionality the software under review provides. We then meet with the developers to gain an appreciation of their vision of the software. We install and use the relevant software, exploring the user interactions and roles. While we do this, we brainstorm threat models and attack surfaces. We read design documentation, review other audit results, search for similar projects, examine source code dependencies, skim open issue tickets, and generally investigate details other than the implementation.

#### **Documenting Results:**

We follow a conservative, transparent process for analyzing potential security vulnerabilities and seeing them through successful remediation. Whenever a potential issue is discovered, we immediately create an Issue entry for it in this document, even though we have not yet verified the feasibility and impact of the issue. This process is conservative because we document our suspicions early even if they are later shown to not represent exploitable vulnerabilities. We generally follow a process of first documenting the suspicion with unresolved questions, then confirming the issue through code analysis, live experimentation, or automated tests. Code analysis is the most tentative, and we strive to provide test code, log captures, or screenshots demonstrating our confirmation. After this we analyze the feasibility of an attack in a live system.

#### Suggested Solutions:

We search for immediate mitigations that live deployments can take, and finally we suggest the requirements for remediation engineering for future releases. The mitigation and remediation recommendations should be scrutinized by the developers and deployment engineers, and successful mitigation and remediation is an ongoing collaborative process after we deliver our report, and before the details are made public.

# Disclaimers

### EtherAuthority.io Disclaimer

EtherAuthority team has analyzed this smart contract in accordance with the best industry practices at the date of this report, in relation to: cybersecurity vulnerabilities and issues in smart contract source code, the details of which are disclosed in this report, (Source Code); the Source Code compilation, deployment and functionality (performing the intended functions).

Due to the fact that the total number of test cases are unlimited, the audit makes no statements or warranties on security of the code. It also cannot be considered as a sufficient assessment regarding the utility and safety of the code, bugfree status or any other statements of the contract. While we have done our best in conducting the analysis and producing this report, it is important to note that you should not rely on this report only. We also suggest conducting a bug bounty program to confirm the high level of security of this smart contract.

### **Technical Disclaimer**

Smart contracts are deployed and executed on the blockchain platform. The platform, its programming language, and other software related to the smart contract can have their own vulnerabilities that can lead to hacks. Thus, the audit can't guarantee explicit security of the audited smart contracts.

# Appendix

### **Code Flow Diagram - Edov NFT Protocol**

### EdoMarketplace Diagram



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### EdoMarketplaceManagement Diagram



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### EdoMarketplaceManagementAdmin Diagram



- ♦ QisContract()
- send∀alue()
- functionCall()
- ♦ functionCallWithValue()
- Q functionStaticCall()
   Q verifyCallResultFromTarget()
- ✓ QverifyCallResult()
- QvernyCalir
   Q\_revert()

C EdoMarketplaceManagementAdmin Initializable OwnableUpgradeable o address depositAddress o address agentAddress O address edoVerseFoundationAddress ○ address edoVerseIncAddress uint256 agentRefundFeeRate ○ uint256 edoVerseFoundationFeeRate ○ uint256 edoVerseIncFeeRate o address=>bool isEdoNFTContractAddress address=>bool isEdoPaymentContractAddress setDepositAddress() setAgentAddress() setEdoVerseFoundationAddress() setEdoVerselncAddress() includeNFTContractAddress() excludeNFTContractAddress() QisApprovedNFTContractAddress() includePaymentContractAddress() excludePaymentContractAddress() QisApprovedPaymentContractAddress() setFeeRateDistribution() C) OwnableUpgradeable Initializable ContextUpgradeable address \_owner uint256 \_\_gap



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# **Slither Results Log**

#### Slither log >> EdoMarketplace.sol

INFO:Detectors: fridalize(uint256,uint256,uint256,aint256,address,address,address,address,address).\_agentAddress (EdoMa INF0:Detectors: AddressUpgradeable.\_revert(bytes,string) (EdoMarketplace.sol#539-548) uses assembly - INLINE ASM (EdoMarketplace.sol#541-544) Reference: https://github.com/crytic/slither/wiki/Detector-Documentation#assembly-usage INF0:Detectors: INFO:Detectors: AddressUpgradeable.\_revert(bytes,string) (EdoMarketplace.sol#539-548) is never used and should be removed AddressUpgradeable.functionCall(address,bytes) (EdoMarketplace.sol#467-469) is never used and should be removed AddressUpgradeable.functionCall(address,bytes,string) (EdoMarketplace.sol#471-477) is never used and should be removed AddressUpgradeable.functionCall(address,bytes,string) (EdoMarketplace.sol#471-477) is never used and should be removed AddressUpgradeable.functionCallWithValue(address,bytes,uint256) (EdoMarketplace.sol#479-485) is never used and should be removed AddressUpgradeable.functionCallWithValue(address,bytes,uint256,string) (EdoMarketplace.sol#487-496) is never used and should be removed AddressUpgradeable.functionStaticCall(address,bytes) (EdoMarketplace.sol#498-500) is never used and should be removed AddressUpgradeable.functionStaticCall(address,bytes,string) (EdoMarketplace.sol#502-509) is never used and should be removed INF0:Detectors Pragma version^0.8.4 (EdoMarketplace.sol#2) necessitates a version too recent to be trusted. Consider deploying with 0.6.12/0.7 solc-0.8.4 is not recommended for deployment Reference: https://github.com/crytic/slither/wiki/Detector-Documentation#incorrect-versions-of-solidity INFO:Detectors: TNF0:Detectors: INF0:Detectors: Function ContextUpgradeable.\_\_Context\_init() (EdoMarketplace.sol#599-600) is not in mixedCase Function ContextUpgradeable.\_\_Context\_init\_unchained() (EdoMarketplace.sol#602-603) is not in mixedCase Variable ContextUpgradeable.\_\_gap (EdoMarketplace.sol#612) is not in mixedCase Function OwnableUpgradeable.\_\_Ownable\_init() (EdoMarketplace.sol#623-625) is not in mixedCase Function OwnableUpgradeable.\_\_Ownable\_init\_unchained() (EdoMarketplace.sol#627-629) is not in mixedCase Function OwnableUpgradeable.\_\_Ownable\_init\_unchained() (EdoMarketplace.sol#627-629) is not in mixedCase Parameter EdoMarketplaceManagementAdmin.setDepositAddress(address).\_depositAddress (EdoMarketplace.sol#706) is not in mixedCase Parameter EdoMarketplaceManagementAdmin.setAgentAddress(address).\_gentAddress (EdoMarketplace.sol#714) is not in mixedCase Parameter EdoMarketplaceManagementAdmin.setEdoVerseFoundationAddress(address).\_edoVerseFoundationAddress (EdoMarketplace.sol#714) is not in mixedCase 9) is not in mixedCase Parameter EdoMarketplaceManagementAdmin.setEdoVerseIncAddress(address). edoVerseIncAddress (EdoMarketplace.sol#724) is not in m ixedCase Parameter EdoMarketplaceManagementAdmin.includeNFTContractAddress(address).\_NFTContractAddress (EdoMarketplace.sol#730) is not in mixedCase Parameter EdoMarketplaceManagementAdmin.excludeNFTContractAddress(address).\_NFTContractAddress (EdoMarketplace.sol#738) is not in mixedCase Parameter EdoMarketplace.initialize(uint256,uint256,uint256,uint256,address,address,address,address,address).\_edoNFTCon tractAddress (EdoMarketplace.sol#867) is not in mixedCase Parameter EdoMarketplace.initialize(uini256,uini256,uini256,uini256,address,address,address,address,address,address).\_edoPaymen tContractAddress (EdoMarketplace.sol#868) is not in mixedCase Reference: https://github.com/crytic/slither/wiki/Detector-Documentation#conformance-to-solidity-naming-conventions 

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 EdoMarketplaceManagement.setAgentRefundAddress(address) (EdoMarketplace.sol#798-801)
 EdoMarketplaceManagementAdmin.setDepositAddress(address) (EdoMarketplace.sol#705-712)
 EdoMarketplaceManagementAdmin.setEdoVerseFoundationAddress(address) (EdoMarketplace.sol#719-722)
 EdoMarketplaceManagementAdmin.setEdoVerseIncAddress(address) (EdoMarketplace.sol#724-727)
 EdoMarketplaceManagementAdmin.setFeeRateDistribution(uint256,uint256,uint256) (EdoMarketplace.sol#78-772)
 EdoMarketplaceManagement.setFerviceFeeRate(uint256) (EdoMarketplace.sol#303-811)
 OwnableUpgradeable.transferOwnership(address) (EdoMarketplace.sol#808-671)
 EdoMarketplaceManagement.withdraw(address) (EdoMarketplace.sol#817-827)
 tetps://github.com/crytic/slither/wiki/Detector-Documentation#unimplemented-functions Reference: INF0:Detectors: INFO:Detectors: OwnableUpgradeable.\_\_gap (EdoMarketplace.sol#688) is never used in EdoMarketplace (EdoMarketplace.sol#830-1042) OwnableUpgradeable.\_owner (EdoMarketplace.sol#616) is never used in EdoMarketplace (EdoMarketplace.sol#830-1042) EdoMarketplaceManagement.NON\_AGENT\_FEE (EdoMarketplace.sol#780) is never used in EdoMarketplace (EdoMarketplace Reference: https://github.com/crytic/slither/wiki/Detector-Documentation#unused-state-variables setListingNFT(address,uint256,address,uint256) should be declared external:

### Slither log >> EdoMarketplaceManagement.sol

INFO:Detectors: EdoMarketplaceManagementAdmin.setDepositAddress(address). depositAddress (EdoMarketplaceManagement.sol#544) lacks a zero-check - depositAddress = \_depositAddress (EdoMarketplaceManagement.sol#549) Reference: https://github.com/crytic/slither/wiki/Detector-Documentation#missing-zero-address-validation INF0:Detectors: INFO:Detectors: AddressUpgradeable.\_revert(bytes,string) (EdoMarketplaceManagement.sol#377-386) uses assembly - INLINE ASM (EdoMarketplaceManagement.sol#379-382) Reference: https://github.com/crytic/slither/wiki/Detector-Documentation#assembly-usage INFO.Detectors Pragma versio 0.6.12/0.7.6 0.6.12/0.7.6 sol-0.8.4 is not recommended for deployment Reference: https://github.com/crytic/slither/wiki/Detector-Documentation#incorrect-versions-of-solidity INFO:Detectors: Low level call in AddressUpgradeable.sendValue(address,uint256) (EdoMarketplaceManagement.sol#298-303): - (success) = recipient.call{value: amount}() (EdoMarketplaceManagement.sol#301) Low level call in AddressUpgradeable.functionCallWithValue(address,bytes,uint256,string) (EdoMarketplaceManagement.sol#325-334) . : - (success,returndata) = target.call{value: value}(data) (EdoMarketplaceManagement.sol#332) Low level call in AddressUpgradeable.functionStaticCall(address,bytes,string) (EdoMarketplaceManagement.sol#340-347): - (success,returndata) = target.staticcall(data) (EdoMarketplaceManagement.sol#345) Reference: https://github.com/crytic/slither/wiki/Detector-Documentation#low-level-calls INF0:Detectors: Function ContextUpgradeable.\_\_Context\_init() (EdoMarketplaceManagement.sol#437-438) is not in mixedCase Function ContextUpgradeable.\_\_Context\_init\_unchained() (EdoMarketplaceManagement.sol#440-441) is not in mixedCase Variable ContextUpgradeable.\_\_gap (EdoMarketplaceManagement.sol#461-463) is not in mixedCase Function OwnableUpgradeable.\_\_Ownable\_init() (EdoMarketplaceManagement.sol#461-463) is not in mixedCase Function OwnableUpgradeable.\_\_Ownable\_init() (EdoMarketplaceManagement.sol#461-463) is not in mixedCase Function OwnableUpgradeable.\_\_Ownable\_init() (EdoMarketplaceManagement.sol#461-463) is not in mixedCase Function OwnableUpgradeable.\_\_Ownable\_init\_unchained() (EdoMarketplaceManagement.sol#465-467) is not in mixedCase Parameter EdoMarketplaceManagementAdmin.setDepositAddress(address).\_\_depositAddress (EdoMarketplaceManagement.sol#464) Parameter EdoMarketplaceManagementAdmin.setDepositAddress(address).\_\_depositAddress (EdoMarketplaceManagement.sol#464) Parameter EdoMarketplaceManagement.sol#544) is not in mixedCase dCase Parameter EdoMarketplaceManagementAdmin.setEdoVerseFoundationAddress(address).\_edoVerseFoundationAddress (EdoMarketplaceManage ant.sol#557) is not in mixedCase Parameter EdoMarketplaceManagementAdmin.setEdoVerseIncAddress(address).\_edoVerseIncAddress (EdoMarketplaceManagement.sol#562) arameter EdoMarketplaceManagementAdmin.setEdoVerseinExddress(address).\_edoVerseinExddress (EdoMarketplaceManagement.sot#502) t arameter EdoMarketplaceManagementAdmin.includeNFTContractAddress(address).\_NFTContractAddress (EdoMarketplaceManagement.sol#56 arameter EdoMarketplaceManagementAdmin.excludeNFTContractAddress(address).\_NFTContractAddress (EdoMarketplaceManagement.sol#57 b) is not in mixedCase
Parameter EdoMarketplaceManagementAdmin.isApprovedNFTContractAddress(address).\_NFTContractAddress (EdoMarketplaceManagement.sol
#500) is not in mixedCase tAdmin.setFeeRateDistribution(uint256,uint256,uint256).\_edoVerseFoundationFeeRate (EdoMarketpl Parameter EdoMarketplaceManagementAdmin.setFeeRateDistribution(uint256,uint256,uint256).\_edoVerseIncFeeRate (EdoMarketplaceMana Parameter EdoMarketplaceManagementAdmin.setFeeRateDistribution(uint256,uint256,uint256).\_edoVerseIncFeeRate (EdoMarketplaceMana ement.sol#599) is not in mixedCase arameter EdoMarketplaceManagement.setAgentRefundAddress(address).\_agentRefundAddress (EdoMarketplaceManagement.sol#636) is not in mixedCase Parameter EdoMarketplaceManagement.setServiceFeeRate(uint256).\_serviceFeeRate (EdoMarketplaceManagement.sol#642) is not in mixe https://github.com/crytic/slither/wiki/Detector-Documentation#conformance-to-solidity-naming-conventions Reference: OwnableUpgradeable.\_\_gap (EdoMarketplaceManagement.sol#526) is never used in EdoMarketplaceManagement (EdoMarketplaceManagement .sol#613-666) JOHANSKETPLACEManagement.NON\_AGENT\_FEE (EdoMarketplaceManagement.sol#618) is never used in EdoMarketplaceManagement (EdoMarketp laceManagement.sol.#613-666) Reference: https://github.com/crytic/slither/wiki/Detector-Documentation#unused-state-variables INF0:Detectors: renounceOwnership() should be declared external: - OwnableUpgradeable.renounceOwnership() (EdoMarketplaceManagement.sol#498-500)
 transferOwnership(address) should be declared external:

 OwnableUpgradeable.renorship() (EdoMarketplaceManagement.sol#506-509)

 Reference: https://github.com/crytic/slither/wiki/Detector-Documentation#public-function-that-could-be-declared-external
 INFO:Slither:EdoMarketplaceManagement.sol analyzed (8 contracts with 75 detectors), 63 result(s) found
 INFO:Slither:Use https://crytic.io/ to get access to additional detectors and Github integration

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#### Slither log >> EdoMarketplaceManagementAdmin.sol

INFO:Detectors: EdoMarketplaceManagementAdmin.setDepositAddress(address)depositAddress (EdoMarketplaceManagementAdmin.sol#256) lacks a zero-c back en
<pre>- depositAddress = _depositAddress (EdoMarketplaceManagementAdmin.sol#261) Reference: https://github.com/crytic/slither/wiki/Detector-Documentation#missing-zero-address-validation INEO:Detectors:</pre>
AddressUpgradeablerevert(bytes,string) (EdoMarketplaceManagementAdmin.sol#89-98) uses assembly - INLINE ASM (EdoMarketplaceManagementAdmin.sol#91-94)
Reference: https://github.com/crytic/slither/wiki/Detector-Documentation#assembly-usage
<pre>INF0:Detectors: Pragma version^0.8.4 (EdoMarketplaceManagementAdmin.sol#2) necessitates a version too recent to be trusted. Consider deploying with 0.6.12/0.7.6 solc-0.8.4 is not recommended for deployment Reference: https://github.com/crytic/slither/wiki/Detector-Documentation#incorrect-versions-of-solidity INF0:Detectors: Low level call in AddressUpgradeable.sendValue(address.uint256) (EdoMarketplaceManagementAdmin.sol#10-15):</pre>
<pre>INN-Diputetors: Function ContextUpgradeableContext_init() (EdoMarketplaceManagementAdmin.sol#149-150) is not in mixedCase Function ContextUpgradeableOmable_init() (EdoMarketplaceManagementAdmin.sol#132-153) is not in mixedCase Function OwnableUpgradeableOwnable_init() (EdoMarketplaceManagementAdmin.sol#177-179) is not in mixedCase Function OwnableUpgradeableOwnable_init() (EdoMarketplaceManagementAdmin.sol#177-179) is not in mixedCase Function OwnableUpgradeableOwnable_init() (EdoMarketplaceManagementAdmin.sol#177-179) is not in mixedCase Parameter EdoMarketplaceManagementAdmin.setDepositAddress(address)depositAddress (EdoMarketplaceManagementAdmin.sol#264) is not i n mixedCase Parameter EdoMarketplaceManagementAdmin.setEdoVerseFoundationAddress (EdoMarketplaceManagementAdmin.sol#264) is not i n mixedCase Parameter EdoMarketplaceManagementAdmin.setEdoVerseFoundationAddress (EdoMarketplaceManagementAdmin.sol#264) is not in mixedCase Parameter EdoMarketplaceManagementAdmin.setEdoVerseFoundationAddress (EdoMarketplaceManagementAdmin.sol#272) is not in mixedCase Parameter EdoMarketplaceManagementAdmin.setEdoVerseIncAddress(address)edoVerseIncAddress (EdoMarketplaceManagementAdmin.sol#274) is not in mixedCase Parameter EdoMarketplaceManagementAdmin.setEdoVerseIncAddress(address)edoVerseIncAddress (EdoMarketplaceManagementAdmin.sol#274) is not in mixedCase Parameter EdoMarketplaceManagementAdmin.setEdoVerseIncAddress(address)NFTContractAddress (EdoMarketplaceManagementAdmin.sol#2820) is not in mixedCase Parameter EdoMarketplaceManagementAdmin.isApprovedNFTContractAddress(address)NFTContractAddress (EdoMarketplaceManagementAdmin.sol#292) is not in mixedCase Parameter EdoMarketplaceManagementAdmin.isApprovedNFTContractAddress(address)edoPaymentContractAddress (EdoMarketplaceManagementAdmin.sol#292) is not in mixedCase Parameter EdoMarketplaceManagementAdmin.isApprovedNpaymentContractAddress(address)edoPaymentContractAddress (EdoMarketplaceManage Parameter EdoMarketplaceManagementAdmin.</pre>
INFO:Detectors: OwnableUpgradeablegap (EdoMarketplaceManagementAdmin.sol#238) is never used in EdoMarketplaceManagementAdmin (EdoMarketplace ManagementAdmin.sol#242-323) Reference: https://github.com/crytic/slither/wiki/Detector-Documentation#unused-state-variables INFO:Detectors:

e0wners! ip() should declared external

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# **Solidity Static Analysis**

#### EdoMarketplace.sol

#### Security

#### Check-effects-interaction:

Potential violation of Checks-Effects-Interaction pattern in EdoMarketplace.setListingNFT(address,uint256,address,uint256): Could potentially lead to reentrancy vulnerability. Note: Modifiers are currently not considered by this static analysis. <u>more</u> Pos: 84:4:

#### Check-effects-interaction:

Potential violation of Checks-Effects-Interaction pattern in EdoMarketplace.buyEdoNFT(address,uint256): Could potentially lead to re-entrancy vulnerability. Note: Modifiers are currently not considered by this static analysis. <u>more</u> Pos: 109:4:

#### Check-effects-interaction:

Potential violation of Checks-Effects-Interaction pattern in EdoMarketplace.cancelTrade(address,uint256): Could potentially lead to re-entrancy vulnerability. Note: Modifiers are currently not considered by this static analysis. <u>more</u> Pos: 137:4:

### Gas & Economy

#### Gas costs:

Gas requirement of function EdoMarketplace.depositFeeAmount 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: 47:4:

#### Gas costs:

Gas requirement of function EdoMarketplaceManagement.withdraw 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: 51:4:

#### Gas costs:

Gas requirement of function EdoMarketplaceManagementAdmin.setFeeRateDistribution 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: 74:4:

#### Miscellaneous

#### Constant/View/Pure functions:

EdoMarketplace.getListingEdoNfts() : Is constant but potentially should not be. Note: Modifiers are currently not considered by this static analysis.

Pos: 171:4:

### Constant/View/Pure functions:

EdoMarketplace.getHash(address,uint256) : Is constant but potentially should not be. Note: Modifiers are currently not considered by this static analysis.

<u>more</u> Pos: 193:4:

#### **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.

Pos: 41:8:

#### 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.

<u>more</u>

Pos: 83:8:

#### EdoMarketplaceManagement.sol

#### Gas & Economy

#### Gas costs:

Gas requirement of function EdoMarketplaceManagement.depositFeeAmount 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: 47:4:

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#### Gas costs:

Gas requirement of function EdoMarketplaceManagement.setFeeRateDistribution 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: 74:4:

#### Gas costs:

Gas requirement of function EdoMarketplaceManagementAdmin.setFeeRateDistribution 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: 74:4:

#### Miscellaneous

### 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.

Pos: 41:8:

### 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.

Pos: 83:8:

#### EdoMarketplaceManagementAdmin.sol

### Gas & Economy

#### Gas costs:

Gas requirement of function EdoMarketplaceManagementAdmin.setFeeRateDistribution 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: 74:4:

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#### Miscellaneous

### **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: 31:8:

#### **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.

<u>more</u> Pos: 36:8:

FUS. 30.C

#### 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.

<u>more</u> Pos: 41:8:

### 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: 83:8:

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# Solhint Linter

#### EdoMarketplace.sol

EdoMarketplace.sol:2:1: Error: Compiler version ^0.8.15 does not satisfy the r semver requirement

#### EdoMarketplaceManagement.sol



#### EdoMarketplaceManagementAdmin.sol

EdoMarketplaceManagementAdmin.sol:2:1: Error: Compiler version ^0.8.15 does not satisfy the r semver requirement EdoMarketplaceManagementAdmin.sol:46:9: Error: Variable name must be in mixedCase EdoMarketplaceManagementAdmin.sol:54:40: Error: Variable name must be in mixedCase EdoMarketplaceManagementAdmin.sol:58:43: Error: Variable name must be

#### Software analysis result:

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



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