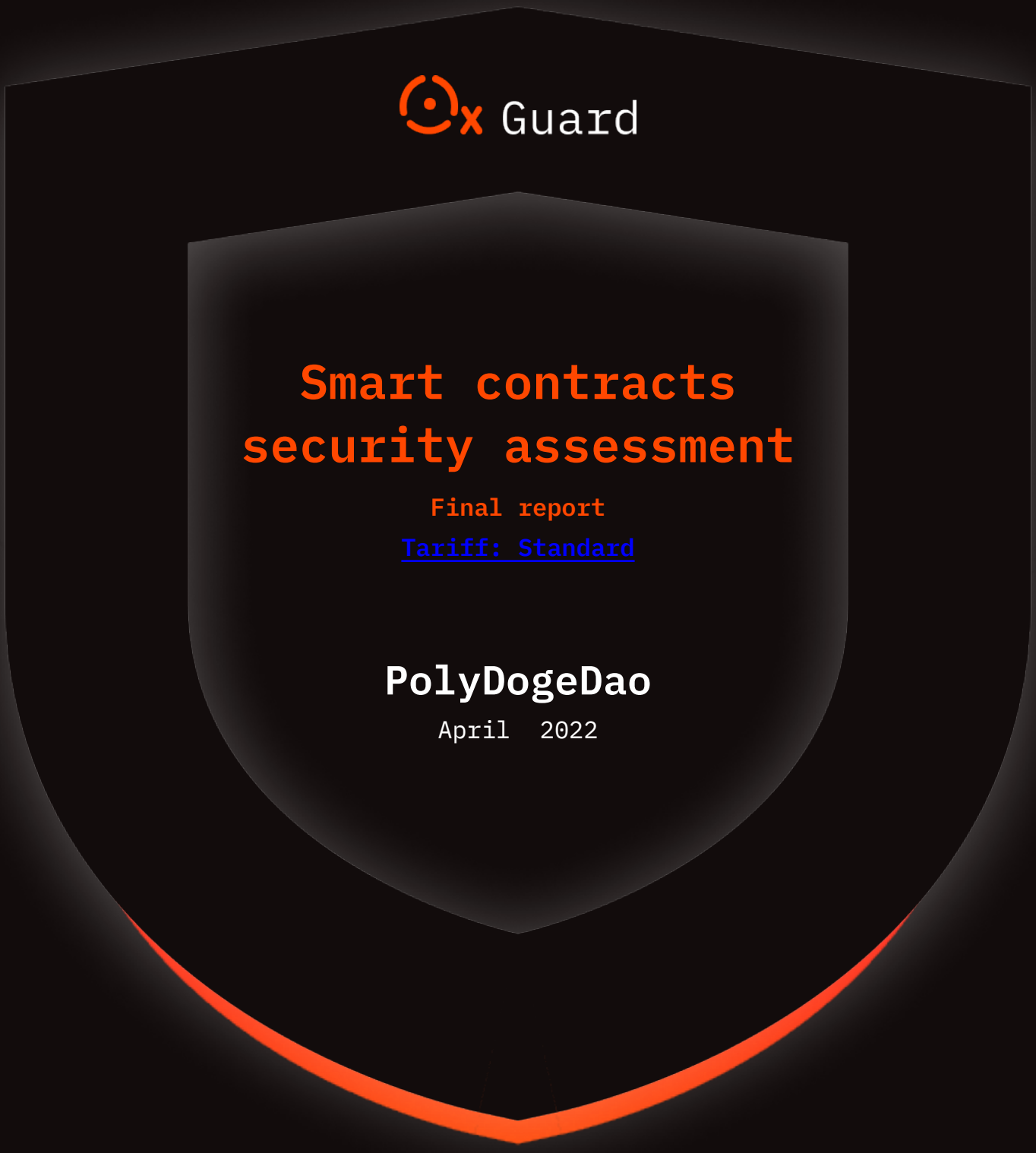

Smart contracts security assessment

Final report

Tariff: Standard

PolyDogeDao

April 2022

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Contents

Introduction

This report has been prepared for the PolyDogeDao team upon their request.

The audited project is a fork of the Tomb Finance Project.

Further details about PolyDogeDao are available at the official website: polydogedao.net

Name	PolyDogeDao
Audit date	2022-04-05 - 2022-04-07
Language	Solidity
Platform	Polygon Network

Contracts checked

Name	Address
PolyDogeDollar	https://polygonscan.com/address/0x146e58D34EaB0bFf7e0a63cfe9332908d680c667#code
PolyDogeShare	https://polygonscan.com/address/0x3068382885602FC0089aeC774944b5ad6123ae60#code
PolyDogeBond	https://polygonscan.com/address/0x6b6969E2C4Db7c5989EE36610405D894Cd5aC9d7#code
PDS Reward Pool	https://polygonscan.com/address/0x9682D175830643658798ac3367915e57bDdB506A#code
Oracle	https://polygonscan.com/address/0x911211346c585B3A5c0270aD7433b58582F936a2#code
Boardroom	https://polygonscan.com/address/0x83c3972EeFb3326B5098C6DBec01dCC8988b2886#code
Treasury	https://polygonscan.com/address/0xe177227f85daA48ec89dd3ef557e277a4E380176#code
Multiple contracts	

Procedure

We perform our audit according to the following procedure:

Automated analysis

- Scanning the project's smart contracts with several publicly available automated Solidity analysis tools
- Manual verification (reject or confirm) all the issues found by the tools

Manual audit

- Comparing the project to the Tomb Finance implementation

Classification of issue severity

High severity	High severity issues can cause a significant or full loss of funds, change of contract ownership, major interference with contract logic. Such issues require immediate attention.
Medium severity	Medium severity issues do not pose an immediate risk, but can be detrimental to the client's reputation if exploited. Medium severity issues may lead to a contract failure and can be fixed by modifying the contract state or redeployment. Such issues require attention.
Low severity	Low severity issues do not cause significant destruction to the contract's functionality. Such issues are recommended to be taken into consideration.

Issues

High severity issues

1. Tax bypass (PolyDogeDollar)

Tax avoidance in the Tomb project is the main problem the team faced. The problem is that there is an invariant in the `transferFrom()` function that deducts tax for the transfer of tokens, but there is also an invariant without deduction of tax that calls the `transfer()` function. With the help of this problem, you can bypass all tax deductions if you use only the `transfer()` function and it is possible to violate the tokenomics of the project.

Recommendation: It is recommended to overload the `transfer()` function to work with tax or completely remove the tax functionality in contracts.

Team response: autoCalculateTax: is disabled on deployed contracts, so, no tax on transfer is applied.

Medium severity issues

1. Contract ownership (Multiple contracts)

1) The projects owner can change the `taxRate` in PolyDogeDollar token up to 100% in the `setTaxRate()` function if you change the `taxOffice` in the `setTaxOffice()` function to a compromised address.

2) Operator can change `taxTiersTwaps` and `taxTiersRate` up to 100% in PolyDogeDollar token in `setTaxTiersTwap()` and `setTaxTiersRate()` functions.

3) Operator can change the addresses of funds in the Treasury contract using the function `setExtraFunds()` function. The `daoFund` can be withdrawn if the operator account is compromised.

Recommendation: There are a large number of functions with the `onlyOperator()` modifier, there is a possibility that the operator can be compromised. It is recommended to create multiple roles for

different kinds of functions to reduce the operator's problem. It is also recommended to add a time delay to the especially important set functions using the TimelockController. We also recommend that you look through the entire codebase to find functions that are dangerous for you as the owner of the project (mainly set functions), if there are any, then add a call to them via multisig wallet. This will help avoid the issue of owner compromise.

Low severity issues

1. Few events (Multiple contracts)

Many set functions from contracts are missing events when changing important values in the contact.

Recommendation: Create events for these set functions.

Conclusion

PolyDogeDao PolyDogeDollar, PolyDogeShare, PolyDogeBond, PDS Reward Pool, Oracle, Boardroom, Treasury, Multiple contracts contracts were audited. 1 high, 1 medium, 1 low severity issues were found.

The PolyDogeDao Project was compared with the Tomb Project. PolyDogeDao has changed the implementation of `PDDGenesisPool` and `Treasury`.

In the `PDDGenesisPool`, the `depositFeeBP` field has been added to the pool structure, which is responsible for the size of the deposit commission.

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