## Audit Findings 201 Secureum Bootcamp



Consensys Audit Umbra Finding 5.2

Access Control & Input Validation

External Contract Call w/ Untrusted Parameters

Document/Validate Potential Edge Cases



Consensys Audit Umbra Finding 5.3

Specification/ Documentation

Deflationary/ Inflationary/Rebasing

Document Token Behavior Restrictions



Consensys Audit Defi Saver Finding 5.5

Testing

Incomplete/Failing Tests

Add Full Coverage Test Suite



Consensys Audit Defi Saver Finding 5.6

Naming/Documentation/ Refactoring

Misleading Function
Names & Assumptions

Refactor Code Document Assumptions



Consensys Audit Defi Saver Finding 5.10

Error Checking

Unchecked Return Value
Transferred Tokens

Check Return Value



Consensys Audit Umbra Finding 5.11

Access Control & Logging

Missing Access Control for Logging Function

Add Access Control



Consensys Audit DAOfi Finding 3.1

Documentation

Stale Comments about Storage Slots

Remove State Comments



Consensys Audit MStable-1.1 Finding 6.14

Documentation

Mismatch b/w Code & Comment

Make Comment & Code Consistent



Consensys Audit DAOfi Finding 3.2

Unnecessary Code/Logic

Getter Function for Immutable Address

Replace Function Call w/ Variable Read



Consensys Audit DAOfi Finding 3.4

Testing

Insufficient Validation for Complex Math

Add Fuzzing & Unit/ Property Tests



Consensys Audit Fei Protocol Finding 3.10

Application Logic

Proposal Cancellation & States Allowed

Restrict Cancellation to Certain States



Consensys Audit eRLC Finding 4.3

Access Control & Timing

Immediate Privilege Escalation

Add TimeLock to Granting Privileges



Consensys Audit 1inch Finding 4.1

Documentation & Testing

Minimal Comments Limited Test Coverage

Add Comments Increase Test Coverage



Consensys Audit 1inch Finding 4.6

Configuration

Floating/Unlocked Solidity Compiler Pragma

Fixed Pragma Recommended Version



Consensys Audit 1inch Finding 4.7

Denial-of-Service

Hardcoded Gas Assumptions

Document & Validate



Consensys Audit 1inch Finding 5.1

Access Control & Input/ Data Validation

User-controlled Contract & Tokens

Specify & Document & Validate



Consensys Audit 1inch Finding 5.7

Privileged Roles & Timing

Critical Changes & Frontrunning

Two-step Change w/ Time Window for Users



Consensys Audit Growth Defi Finding 4.2

> Specification/ Documentation

Single README w/ Code Comments

Improve Specification & Documentation



Consensys Audit Growth Defi Finding 4.3

Access Control Least Privilege Mechanism

Loosely Defined Roles/ Permissions

Document & Monitor Roles & Permissions



Consensys Audit Growth Defi Finding 5.2

Specification/Access Control

Callbacks/Deflationary/ Inflationary/Rebasing

Evaluate Token Behavior before Inclusion



Consensys Audit Growth Defi Finding 5.6

Naming Convention & Readability

Multiple Contracts Code Reuse & Naming

Use Descriptive Names



Consensys Audit Growth Defi Finding 5.8

Initialization & Timing

User Interaction before Contract Initialization

> Initialize before Interaction



Consensys Audit Growth Defi Finding 6.2

Denial-of-Service

Unbounded Loop Gas Exhaustion

Reconsider Logic or Bound Loop



Consensys Audit Paxos Finding 3.1

Access Control Stale Privileges

Old Owners Never Removed

Remove Old Owners Add New Owners



Consensys Audit Aave V2 Finding 5.6

Flash Loans

Flash Loans -> Interest Rate Fluctuations

Monitor -> Rebalanced
Interest Rate



Consensys Audit Aave Gov Finding 2.3

Validation

Malicious Tokens

Audit Whitelisted Tokens



Consensys Audit Aave CPM Finding 6.2

Specification
Input Validation

Token Decimals > 18
-> Underflow

Validate or Document Design Assumption



Consensys Audit
Aave CPM Finding 5.1

Testing

Price Volatility Chainlink Performance

Validate Performance Assess Risk



Consensys Audit Lien Protocol Finding 2.1

Configuration

Multiple Complex Parts High Attack Surface

Min. Viable System

Iterative/Guarded Launch



Consensys Audit Balancer Finding 3.6

Code Refactoring

Repeated Checks Error-prone

Repeated Checks -> Modifiers



Consensys Audit Balancer Finding 5.4

Ordering

Modifier Ordering Reentrancy Guard

Modifier Order: L -> R



Consensys Audit MCDEX V2 Finding 2.3

Fragile Code

System Side-effects Interdependence

Function Purpose Reduce Dependence



ToB Audit Liquidity Finding 6

Undefined Behavior Logging

Reentrancy -> Event Ordering

Apply CEI Pattern



Tob Audit Origin Dollar Finding 16

Undefined Behavior

Inheritance Variable Shadowing

Remove Shadowed Variables



Tob Audit Origin Dollar Finding 17

Error Handling

Missing Return Caller Check

Add Return Statements



Tob Audit Origin Dollar Finding 18

Undefined Behavior

Interface Impl -> Missing
Inheritance

Inherit from Interfaces



Tob Audit Yield Finding 7

Optimizations

Solidity Compiler Optimization Risks

Evaluate Trade-off Gas Benefits vs Risk



ToB Audit Yield Finding 2

Access Control

Coarse Permissions

Rearchitect Permissions Least Privilege



Tob Audit Yield Finding 4

Data Validation

Timestamp Value
Past/Future Maturity

Sanity/Threshold Check Constructor Parameters



Tob Audit Yield Finding 5

Auditing & Logging

Delegate Add/Remove ->
Emit Event

Check Delegate Enabled/Disabled



ToB Audit
ox Protocol Finding 8

Auditing & Logging

Critical Operations
No Events

Add Events Off-chain Monitoring



Tob Audit
ox Protocol Finding 20

Error Handling

No Function Return
Only False/Revert

Add/Remove Return Document Otherwise



Tob Audit
DFX Finance Finding 2

Specification

max & min: Open Range Unorthodox Definitions

Use Conventional Norms Document Otherwise



Tob Audit
DFX Finance Finding 3

Undefined Behavior

Curve: New/Existing
No Indication

Existing Curve -> Revert
Check New/Existing



Tob Audit DFX Finance Finding 4

Data Validation

Missing Checks Zero-address

Add Checks Best-practice



Tob Audit
DFX Finance Finding 8

Error Handling

Own safeApprove() No Return Check

Use OZ Libraries Add Checks



Tob Audit
DFX Finance Finding 9

Configuration

ERC20 Token
No Name/Symbol/Decimals

Confirm to Specification



Tob Audit DFX Finance Finding 11

Data Validation

Missing SafeMath Inconsistent Use

Consistently Use SafeMath



ToB Audit DFX Finance Finding 16

Timing & Dos

Temp. Contract Freeze Malicious Owner

Low Freeze Time or Permanent Freeze



Tob Audit Hermez Network Finding 4

Dos

Account Creation
No Fee -> Max Accounts

Add Fee Monitor Account Creation



Tob Audit Hermez Network Finding 11

Undefined Behavior

Empty Functions ->
Interfaces -> Error-prone

Use Interfaces



Tob Audit Hermez Network Finding 19

Data Validation

Cancel Non-existing
Transaction -> Event

Validate Transaction Existence



Tob Audit Hermez Network Finding 20

Patching

Dependencies Copied Tracking Bug Fixes

Document/Import
Dependencies -> Tracking



Tob Audit Hermez Network Finding 21

Access Control

Adding New Tokens Anyone or Governance

Sync Specification ->
Implementation



Tob Audit Hermez Network Finding 22

Undefined Behavior

Contract Names Duplicates

Avoid Duplicate Names



ToB Audit Advanced Blockchain Finding 27

Patching

Hardcoded Contract Addresses

Contract Deployer Set Addresses



ToB Audit Advanced Blockchain Finding 22

Configuration

Borrow Rate Blocks/Year

Analyze Deviation Document Risks



ToB Audit Advanced Blockchain Finding 25

Data Validation

Flash Loan Rate No Bounds

Set Low/High Bounds



ToB Audit Advanced Blockchain Finding 4

Patching

Duplicated Code Error-prone

> Code Reuse Inheritance



ToB Audit Advanced Blockchain Finding 5

Testing

Insufficient Testing

Unit Tests Good Coverage



ToB Audit Advanced Blockchain Finding 11

Patching

Vulnerabilities in (Offchain) Dependencies

Track/Verify/Patch/Audit
Dependencies



ToB Audit Advanced Blockchain Finding 16

Documentation

Low Documentation ->
Low Auditability

Documentation Specification



ToB Audit Advanced Blockchain Finding 18

Patching

ABIEncoder 12
Issues & Bugs

Avoid ABIEncoderV2 Refactor Code



Tob Audit dForce Lending Finding 10

Access Controls

Contract Owner Over-privileged

Least Privilege Document Risks



Tob Audit dForce Lending Finding 14

Error Handling

Test Suite Poor Error-handling

Check Errors Follow Best-practices



Sigma Prime Audit Synthetix Finding SEC-04

Patching

Redundant & Unused Code

Use or Remove



Sigma Prime Audit Synthetix Finding SEC-05

Data Validation

Single Account Entire ETH -> Loan

Enforce Cap Document Behavior



Sigma Prime Audit Synthetix Finding SEC-06

Input Validation

Constructor Parameters Zero Addresses

Check Addresses



Sigma Prime Audit Synthetix Finding SEC-08

Auditing & Logging

Events Declared No Emits

Emit Events or Remove Events



Sigma Prime Audit InfiniGold Finding INF-03

Data Validation

transferFrom()
Burn Address

Add require()
to != Burn Address



Sigma Prime Audit InfiniGold Finding INF-06

Dos

reset() -> Unbound List Block Gas Limit

Restrict List Length Check Gas



Sigma Prime Audit InfiniGold Finding INF-08

Timing

ERC20 approve()
Front-running

increaseAllowance()
decreaseAllowance()



Sigma Prime Audit InfiniGold Finding INF-09

Error Checking

Unnecessary require()
Zero-address Check

ERC20 \_transfer()
Remove Check -> Gas



Sigma Prime Audit InfiniGold Finding UNI-05

Data Validation

Rounding to Zero Division

Document Claim -> Rounding Dust



Sigma Prime Audit InfiniGold Finding UNI-06

Auditing & Logging

No Check Event Emitted -> Spam

Check Amount Amount > 0? -> Emit Event



OpenZeppelin Audit Holdefi Finding M04

Specification

Account Liquidation Insufficient Incentives

> Change Design Align Incentives



OpenZeppelin Audit Holdefi Finding M06

Specification

Insolvent Market

Collateral -> Borrow

Minimize Risk Document/Communicate



OpenZeppelin Audit Holdefi Finding M09

Patching

Copy/Reimplement Maintain & Bug Fixes

Import OZ Libraries
Reuse & Extend



OpenZeppelin Audit Holdefi Finding Log

Auditing & Logging

Event Parameters
Not Indexed

Indexed Parameters Topic vs Data



OpenZeppelin Audit Holdefi Finding NO6

Readability

Named Returns Inconsistent Use

Remove Named Returns Explicit Returns



OpenZeppelin Audit Holdefi Finding NO7

Timing

block.timestamp Unreliable -> Miners

Test & Document Warn Users



OpenZeppelin Audit BarnBridge Finding NO1

Error Checking

Assignment in require()

require() -> Checks
No Side-effects



OpenZeppelin Audit BarnBridge Finding NO2

Patching

Commented Code Readability & Auditability

Uncomment or Remove



OpenZeppelin Audit Compound Finding NO2

Error Handling

Revert Messages Uninformative & Misleading

> Use Informative & Meaningful Messages



OpenZeppelin Audit Fei Protocol Finding L04

Configuration

Solidity Versions Outdated & Multiple

Recent & Single & Fixed



OpenZeppelin Audit Fei Protocol Finding N22

Testing

Code Constants
Test & Production

Test & Production Different Environments



OpenZeppelin Audit Fei Protocol Finding N23

Specification

Integer Constants Size < 256 Bits

Gas Costs Execution vs Storage



OpenZeppelin Audit Fei Protocol Finding N28

Specification

Integers uint vs uint256

Favor Explicitness Use uint256



OpenZeppelin Audit
UMA Protocol Finding MO2

Specification

Function Names Unexpected Side-effects

Sync Names -> Actions
Specific Setters/Getters



OpenZeppelin Audit GEB Protocol Finding M06

Data Validation

Unsafe Casting
uint -> int

Verify Range Use SafeCast



OpenZeppelin Audit GEB Protocol Finding L06

Error Checking

Missing Error Messages require()

Specific & Informative Error Messages



OpenZeppelin Audit GEB Protocol Finding L11

Testing

Assembly Code

Avoid/Test/Document

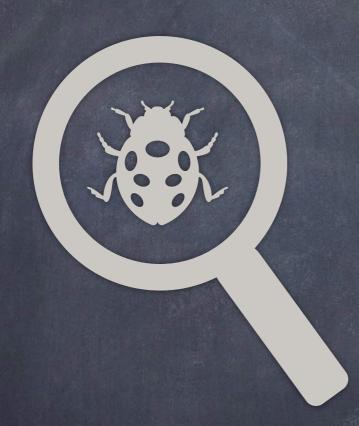


OpenZeppelin Audit GEB Protocol Finding NO3

Error Checking

Catch Clause Not Handled

Emit Event Handle Error



OpenZeppelin Audit GEB Protocol Finding N11

Auditing & Logging

Unnecessary Event Emits
No Significance

Remove Emits
Save Gas



OpenZeppelin Audit Opyn Gamma Finding M01

Data Validation

Non-whitelisted Assets

Whitelist Validate Whitelisting



OpenZeppelin Audit
Opyn Gamma Finding L07

Specification

Function Mismatches
Interfaces & Contracts

Sync Mismatches
Interfaces & Contracts



OpenZeppelin Audit
Opyn Gamma Finding Los

Timing

Non-Atomic Functions
Inconsistent State

Combine Functions

Same Tx -> Atomic Effects



OpenZeppelin Audit Opyn Gamma Finding L11

Patching

Deprecated APIs Chainlink V2 vs V3

Deprecated -> Stop Work
Use Latest APIs



OpenZeppelin Audit PoolTogether V3 Finding C01

Data Validation

sweepTimelockBalances()
Duplicate Users -> Funds Lost

Check Duplicate Users



OpenZeppelin Audit Set Protocol Finding No9

Patching

Clear Variables Zero Address vs delete

Use delete Intention & Idiomatic