

Scanned Code Report

AUDIT AGENT

Code Info

Deep Scan Scan ID
6 Date
December 02, 2025 Organization
igor53627 Repository
iconregistry.eth Branch
main Commit Hash
77c2e94e...461f1fcd

Contracts in scope

contracts/IIconRegistry.sol contracts/IconRegistry.sol

Code Statistics

 Findings
9 Contracts Scanned
2 Lines of Code
660

Findings Summary



Total Findings

 High Risk (0) Medium Risk (0) Low Risk (6) Info (2) Best Practices (1)

Code Summary

The Icon Registry protocol is an on-chain, upgradeable repository for PNG icons, designed to provide a canonical source of visual assets for dApps and wallets. It utilizes the SSTORE2 library to store icon data gas-efficiently, with each icon being written as an immutable data blob.

The system is managed by a privileged owner who is solely responsible for adding, updating, and mapping icons. Icons are identified by a human-readable `slug` (e.g., "protocols/uniswap"), which is hashed for on-chain operations. The registry supports versioning, allowing for icon updates while preserving access to all historical versions. The owner can map these icons to specific token addresses on different chains or directly to chain IDs, enabling easy lookups for front-end integrations.

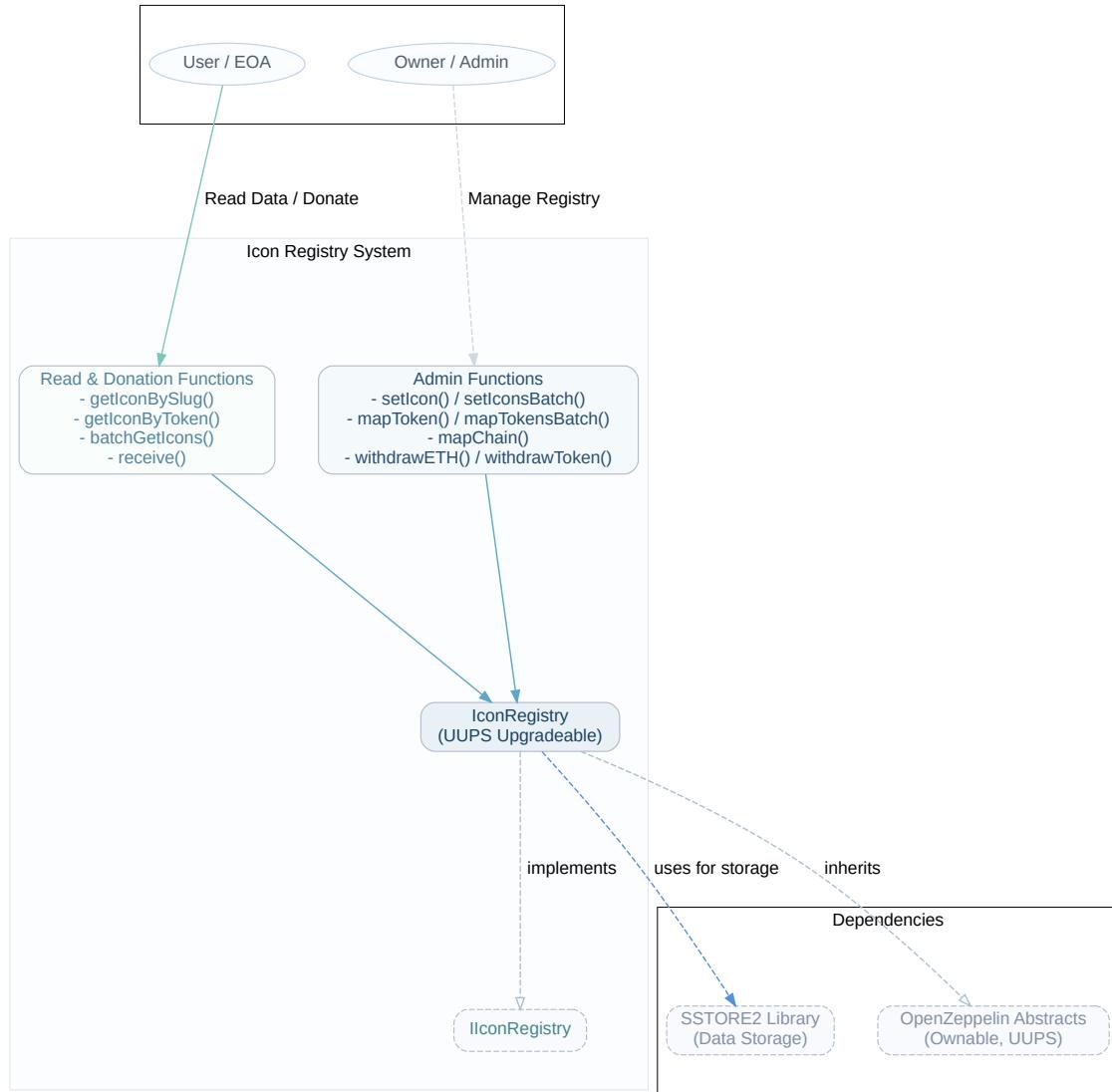
The contract is built using the UUPS upgradeable proxy pattern, allowing for future logic changes by the owner. It also includes a mechanism to accept ETH donations to support the project's maintenance.

Main Entry Points and Actors

All core functions that modify the registry's content are restricted to the contract owner. The only state-changing interaction available to the general public is for making donations.

- **Any User:** Can send ETH to the contract via the `receive()` function to support the registry.

Code Diagram



 1 of 9 Findings contracts/IconRegistry.sol**Magic Numbers Instead Of Constants** • Low Risk

The contract uses magic number literals (e.g., `3`, `2`) directly in the code instead of defining them as named constants. Specifically, the modulo operation `len % 3 == 2` appears multiple times throughout the contract. Using named constants improves code readability, maintainability, and reduces the risk of errors when these values need to be updated. Define constants such as `uint256 private constant MODULO_DIVISOR = 3;` and `uint256 private constant MODULO_REMAINDER = 2;` and reference them throughout the contract.

 2 of 9 Findings contracts/IconRegistry.sol**Empty Code Block Detection** • Low Risk

The function `_authorizeUpgrade(address)` contains an empty code block. Empty functions should be removed or replaced with meaningful implementation. If the function is required by an interface or inheritance pattern, consider adding a comment explaining why it is intentionally empty, or implement the required logic.

 3 of 9 Findings contracts/IconRegistry.sol**Loop contains `require` / `revert` statements** • Low Risk

The contract contains loops with `require` or `revert` statements inside them. If any single iteration fails the require condition, the entire transaction will revert, causing all previous iterations to be rolled back. This can lead to denial of service scenarios where a single invalid item prevents processing of the entire batch. Consider implementing a fail-safe approach that collects failed items and returns them for post-processing, allowing the loop to continue processing valid items.

 4 of 9 Findings contracts/IconRegistry.sol contracts/IconRegistry.sol**Non-Specific Solidity Pragma Version** • Low Risk

The contracts use a wide pragma version range (`pragma solidity ^0.8.22;`) instead of a specific version. This can lead to unexpected behavior when compiled with different compiler versions. It is recommended to use a specific Solidity version (e.g., `pragma solidity 0.8.22;`) to ensure consistent compilation and predictable bytecode generation across different environments.

 5 of 9 Findings contracts/IIconRegistry.sol contracts/IIconRegistry.sol**PUSH0 Opcode Compatibility Issue** • Low Risk

The contracts use Solidity compiler version 0.8.22, which defaults to the Shanghai EVM version. This means the generated bytecode will include PUSH0 opcodes. If deployment is intended for chains other than Ethereum mainnet (such as Layer 2 solutions or other EVM-compatible chains), ensure that the target chain supports the PUSH0 opcode. Otherwise, contract deployment will fail. Consider explicitly specifying the EVM version in the compiler configuration to match your deployment target.

 6 of 9 Findings contracts/IIconRegistry.sol**Unused Custom Error** • Low Risk

The custom error `VersionNotFound()` is defined but never used anywhere in the contract. Unused custom errors should be removed to reduce contract size and improve code clarity. If this error is intended for future use or external reference, consider documenting its purpose or removing it if it is no longer needed.

 7 of 9 Findings contracts/IIconRegistry.sol**Unprotected initializer allows ownership takeover** • Info

```
function initialize(address owner_) external initializer {
    __Ownable_init(owner_);
}
```

The `initialize` function is external and only guarded by OpenZeppelin's `initializer` modifier, but not restricted to the deploying address. If the proxy is deployed without being initialized atomically, any third party can call `initialize(attackerAddress)` and become the contract owner. Once the attacker is owner, they gain full privileges: they can upgrade the implementation via UUPS, manage or overwrite all icons, remap token and chain icons, and withdraw any ETH or ERC20 tokens held by the contract. A realistic attack is to monitor the transaction pool for the proxy deployment, then front-run the legitimate initialization with a higher gas price to claim ownership.

 8 of 9 Findings contracts/IconRegistry.sol**withdrawToken function breaks invariant with fee-on-transfer tokens**

The `withdrawToken` function violates its invariant when handling fee-on-transfer or deflationary ERC20 tokens. The invariant states that after withdrawal, the owner's balance must increase by exactly the amount that was in the contract. However, fee-on-transfer tokens deduct a percentage during transfers, causing the owner to receive less than the contract's original balance.

```
function withdrawToken(address token) external onlyOwner {  
    uint256 balance = IERC20(token).balanceOf(address(this));  
    IERC20(token).safeTransfer(owner(), balance);  
}
```

Scenario:

1. Contract holds 1000 fee-on-transfer tokens (5% fee)
2. `withdrawToken` is called, which transfers 1000 tokens
3. Token contract deducts 5% fee (50 tokens)
4. Owner receives only 950 tokens
5. Contract balance becomes 0 ✓
6. Owner balance increases by 950, not 1000 ✗

The invariant condition

`IERC20(token).balanceOf(owner()) == balance_before_owner + balance_before_contract` is violated because the owner receives `balance_before_contract - fee` instead of the full `balance_before_contract`.

Since the protocol accepts token donations via the `receive()` function and documentation, users could donate fee-on-transfer tokens. When the owner withdraws, they would receive less than expected, and the invariant would be broken.

 9 of 9 Findings contracts/IconRegistry.sol

Missing Events for Fund Withdrawals

 Best Practices

The `withdrawETH()` and `withdrawToken()` functions do not emit events when funds are withdrawn from the contract.

```
function withdrawETH() external onlyOwner {
    (bool success,) = payable(owner()).call{value: address(this).balance}("");
    if (!success) revert TransferFailed();
    // No event emitted
}

function withdrawToken(address token) external onlyOwner {
    uint256 balance = IERC20(token).balanceOf(address(this));
    IERC20(token).safeTransfer(owner(), balance);
    // No event emitted
}
```

This reduces transparency and makes it difficult to:

1. Track fund movements on-chain
2. Monitor donation withdrawals
3. Audit the contract's financial history
4. Set up alerts for fund movements

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