

Smart Contract

Overview

All Attestation contracts must inherit the `Attestation` base contract.

The base contract is ERC721 compliant, which defines the data structure of an Attestation report, and function methods that allow adding and revoking an Attestation.

Once an attester has successfully submitted an Attestation report, the Attestation contract mints an ERC721 NFT to the attester's wallet.

Automata 2.0 has currently built various attestation contracts for the various attestation types, namely:

- `SingleStepOptimisticAttestation.sol`
- `MultiStepOptimisticAttestation.sol`
- `ConsensusBasedAttestation.sol`
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Full details about the various attestation types can be found in the [Attestation](#) section.

Attestation

The Attestation contract itself is considered to be abstract, it is not intended to be deployed as an independent contract. Instead, it is served as a base contract with built-in methods and virtual methods that need to be implemented in the derived contract.

The [Attestation Report](#) object structures are defined here.

SingleStepOptimisticAttestation

[Introduction](#) of the `SingleStepOptimisticAttestation`.

If you're looking to build upon the `SingleStepOptimisticAttestation`, there are 3 pivotal methods awaiting your implementation:

1. `_needVerify`
2.
 - To decide whether the attestation should be verified instantly.
- 3.

...

Copy function `_needVerify()` internal pure returns (bool)

...

1. `_verify`
2.
 - To validate the correctness and authenticity of the submitted attestation.
- 3.

...

Copy function `_verify(bytes calldata data) internal view returns (bool verified, bytes memory dataHash)`

...

1. `_generateSVG`
2.
 - To produce a visual representation (SVG image) for the corresponding NFT.
- 3.

...

Copy function `_generateSVG(uint256 tokenId) internal view returns (string memory)`

...

MultiStepOptimisticAttestation

[Introduction](#) of the MultiStepOptimisticAttestation.

If you're looking to build upon the MultiStepOptimisticAttestation , there are 5 pivotal methods awaiting your implementation:

1. _startChallenge
 2.
 - To handle the logic of starting a challenge.
 - 3.
- ...

Copy function _startChallenge(bytes32hash)internalvirtual

...

1. _handleEvidence
 2.
 - The challenger and the defender post their evidence on-chain.
 - 3.
- ...

Copy function _handleEvidence(bytes32hash,bytesmemorydata)internalvirtual

...

1. _resolveChallenge
 2.
 - To judge the winner of this challenge.
 - 3.
- ...

Copy function _resolveChallenge(bytes32hash)internalvirtualreturns(boolchallengeSuccess)

...

1. _cancelChallenge
 2.
 - To handle the logic of cancelling a challenge.
 - 3.
- ...

Copy function _cancelChallenge(bytes32hash)internalvirtual

...

1. _generateSVG
 2.
 - To produce a visual representation (SVG image) for the corresponding NFT.
 - 3.
- ...

Copy function _generateSVG(uint256tokenId)internalviewreturns(stringmemory)

...

ConsensusBasedAttestation

[Introduction](#) of the ConsensusBasedAttestation.

If you're looking to build upon the ConsensusBasedAttestation , there are 3 pivotal methods awaiting your implementation:

1. _verifyAndUpdateChallenge
 2.
 - To verify whether the signature is valid and from your off-chain consensus party.
 - 3.
- ...

Copy function _verifyAndUpdateSignature(bytes32hash, boolagree, bytescalldatasignatures)internalvirtualreturns(boolvalid)

...

1. `_judgeAttestationStatus`
2.
 - To judge the attestation status according to your consensus mechanism.
- 3.

...

Copy function `_judgeAttestationStatus(bytes32hash)` internalvirtualreturns(`AttestationStatusstatus`)

...

1. `_generateSVG`
2.
 - To produce a visual representation (SVG image) for the corresponding NFT.
- 3.

...

Copy function `_generateSVG(uint256tokenId)` internalviewreturns(stringmemory)

...

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