Core-Carbon-Principles

## Contributors

|  |  |
| --- | --- |
| Name | Organization |
| Debbie Reed | ESMC |
| Cameron Prell | XPansiv |
| Marley Gray | Microsoft |
| Doug Miller | Energy Web Foundation |
| Amy Luers | Microsoft |
| John Lee | Accenture |
| Robert Greenfield | Emerging Impact Group |
| Conor Svensson | Web3 Labs |
| Martin Wainstein | Open Earth Foundation |
| Meerim Ruslanova | Energy Web Foundation |
| Ken Anderson | Hedera Hashgraph |
| Wes Geisenberger | Hedera Hashgraph |
| Tom Herman | AirCarbon Pte Ltd |
| Tom Baumann | Climate Check |

### Taxonomy Formula: [tF’{d,t,e,v,g,OSC}+phCCP+phCCA]

# Token Specification Summary

## Token Classification

|  |  |  |
| --- | --- | --- |
| Template Type: | SingleToken | This token has no sub or child tokens. |
| Token Type: | Fungible | Tokens have interchangeable value with one another, where any quantity of them has the same value as another equal quantity if they are in the same class or series. |
| Token Unit: | Fractional | This token can be sub-divided or split into smaller units or parts based on a certain number of decimal places. |
| Value Type: | Reference | This token is a receipt or title to a material item, property or right. The token represents a reference to the value, can be owned or used digitally via its token. Sometimes referred to as a digital twin. |
| Representation Type: | Unique | Token instances are unique having their own identities and can be individually traced. Each unique token can carry unique properties that cannot be changed in one place and their balances must be summed. These are like bank notes, paper bills and metal coins, they are interchangeable but have unique properties like a serial number. |
| Supply: | Infinite | Infinite supply indicates that tokens in the class can be created and removed with no cap and also potentially reflect negative supply for certain business cases. |

DRAFT - This is a token based on the recommendations from the Taskforce for Scaling Voluntary Carbon Markets (TSVCM) for creating the Core Carbon Principles and extended attributes. It is a Unique Fractional Fungible with Offsetable Supply Control with Revoke and Replacement, Core Carbon Principles and Core Carbon Attributes. It is a token where 1 token equals 1 mtCO2e. A token instance can be minted if the requesting party is in the minters role. This template contains the Replacement, Core Carbon Principles and Core Carbon Attributes property sets as well.

### Example

Typically used to represent a token based on the TSVCM Core Carbon Principles or CCP to be a common representation of a carbon credit designated for use in voluntary markets. When accompanied with additional attributes, credits can be differentiated from their CO2e face value to include details as to reduction vs. removal, project location, durability, etc. These CCP tokens can then be bundled together based on their similar attribute values into 'reference contracts' to be traded in larger lots.

### Analogies

|  |  |
| --- | --- |
| Name | Description |
| Carbon Removal Token | A token created by a verifier that has verified a carbon removal claim. |

# Core-Carbon-Principles is:

* Divisible
* Delegable
* Offsetable
* Roles
* Encumberable
* Transferable
* Transferable
* Mintable
* Revokable

### It includes the following Property Sets:

* Core Carbon Principles
* Core Carbon Attributes

# Core-Carbon-Principles Details

## Unique Fractional Fungible

|  |  |
| --- | --- |
| Type: | Base |
| Name: | Unique Fractional Fungible |
| Id: | 3e05130c-969a-4dfc-abe6-c83fad98a4ec |
| Visual: | &tau;<sub>F'</sub>{<i>d</i>} |
| Tooling: | tF'{d} |
| Version: | 1.0 |

## Definition

Unique, fractional fungible tokens have interchangeable value with each other, where any owned sum of them from a class has the same value as another owned sum from the same class. Similar to physical cash money, a crypto-currency is an example of a fungible token that is divisible. Because this token is unique, it will have its own identity and can have unique properties like a serial number. Implementations should support a GetBalance or List for owners to see their balances or tokens they own.

## Example

Fiat currency is the most widely understood example of a fractional fungible item. A fractional fungible is divisible, so you can 'make change'.

## Analogies

|  |  |
| --- | --- |
| Name | Description |
| Physical Money or Cash | Cash, or fiat money, is freely accepted between parties and can have varying denominations. Money has a face value, on a coin or bill, and can be summed together to represent higher value. It can be divided, making change, and consolidated from many smaller denominations to larger ones and still have the same value. |
| General Admission Movie Ticket | Purchasing a general admission ticket to a movie only allows for you to have a seat, but the seat that you actually get depends on factors like when you arrive. |

## Dependencies

|  |  |  |
| --- | --- | --- |
| Artifact Type | Symbol | Description |
| Base | t | Base Token Definition |

## Incompatible With

|  |  |  |
| --- | --- | --- |
| Artifact Type | Symbol | Id |
| Behavior | ~d | d5807a8e-879b-4885-95fa-f09ba2a22172 |

## Influenced By

|  |  |  |
| --- | --- | --- |
| Description | Symbol | Applies To |

## Artifact Files

|  |  |  |
| --- | --- | --- |
| Content Type | File Name | File Content |
| Control | fractional-fungible.proto |  |
| Uml | fractional-fungible.md |  |

## Code Map

|  |  |  |  |
| --- | --- | --- | --- |
| Map Type | Name | Platform | Location |

## Implementation Map

|  |  |  |  |
| --- | --- | --- | --- |
| Map Type | Name | Platform | Location |

## Resource Map

|  |  |  |  |
| --- | --- | --- | --- |
| Map Type | Name | Location | Description |

# Base Details

|  |  |
| --- | --- |
| Token Name: |  |
| Token Type: | Fungible |
| Representation Type: | Unique |
| Value Type: | Reference |
| Token Unit: | Fractional |
| Symbol: |  |
| Owner: |  |
| Quantity: | 0 |
| Decimals: | 8 |
| Constructor Name: | Constructor |

## Behaviors

## Specification Behavior

# Divisible

### Taxonomy Symbol: d

An ability for the token to be divided from a single whole token into fractions, which are represented as decimal places. Any value greater than 0 will indicate how many fractions are possible where the smallest fraction is also the smallest ownable unit of the token.

### Example

Divisible is common for crypto-currencies or tokens of fiat currency. For example, the US Dollar is divisible to 2 decimal places, where a value like .42 is possible. Bitcoin, is divisible up to 8 decimal places.

### Analogies

|  |  |
| --- | --- |
| Name | Description |
| Analogy 1 | divisible analogy 1 description |

|  |  |
| --- | --- |
| Type: | Behavior |
| Name: | Divisible |
| Id: | 6e3501dc-5800-4c71-b59e-ad11418a998c |
| Visual: | <i>d</i> |
| Tooling: | d |
| Version: | 1.0 |

## Dependencies

|  |  |  |
| --- | --- | --- |
| Artifact Type | Symbol | Description |

## Incompatible With

|  |  |  |
| --- | --- | --- |
| Artifact Type | Symbol | Id |
| Behavior | ~d | d5807a8e-879b-4885-95fa-f09ba2a22172 |

## Influenced By

|  |  |  |
| --- | --- | --- |
| Description | Symbol | Applies To |

## Artifact Files

|  |  |  |
| --- | --- | --- |
| Content Type | File Name | File Content |
| Control | divisible.proto |  |
| Uml | divisible.md |  |

## Code Map

|  |  |  |  |
| --- | --- | --- | --- |
| Map Type | Name | Platform | Location |

## Implementation Map

|  |  |  |  |
| --- | --- | --- | --- |
| Map Type | Name | Platform | Location |

## Resource Map

|  |  |  |  |
| --- | --- | --- | --- |
| Map Type | Name | Location | Description |

|  |  |
| --- | --- |
| Is External: | True |
| Constructor: |  |

## Divisible responds to these Invocations

### Properties

#### Name: Decimals

Value Description: Set to a number greater than Zero, allowing subdivision

Template Value: 8

### Invocations

#### GetDecimals

Id: 01f7ef04-1215-45f1-b118-12b4a76db9ad

Description: Return the value

##### Request

Control Message: GetDecimalsRequest

Description:

###### Parameters

|  |  |
| --- | --- |
| Name | Value |

##### Response

Control Message: GetDecimalsResponse

Description: Return number of decimal places

###### Parameters

|  |  |
| --- | --- |
| Name | Value |
| Decimals | integer |

#### GetDecimalsRequest

Id: 01f7ef04-1215-45f1-b118-12b4a76db9ad

Description: Return the value

##### Request

Control Message: GetDecimalsRequest

Description:

###### Parameters

|  |  |
| --- | --- |
| Name | Value |

##### Response

Control Message: GetDecimalsResponse

Description: Return number of decimal places

###### Parameters

|  |  |
| --- | --- |
| Name | Value |
| Decimals | integer |

## Specification Behavior

# Delegable

### Taxonomy Symbol: g

A token class that implements this behavior will support the delegation of certain behaviors to another party or account to invoke them on the behalf of the owner. When applied to a token, behaviors that are Delegable will enable delegated request invocations. This is useful to provide another party to automatically be able to perform the behaviors that can be delegated without seeking permission up to a certain allowance.

### Example

### Analogies

|  |  |
| --- | --- |
| Name | Description |
| Broker | You may allow a broker to transfer your tokens as a part of an investment strategy. Setting an allowance can cap the total number of tokens the broker is allowed to perform delegated behaviors, when exceeded a new allowance request will need to be granted. |

### Comments

Applied to behaviors that are Delegable.

|  |  |
| --- | --- |
| Type: | Behavior |
| Name: | Delegable |
| Id: | a3d02076-6009-4a65-9ed4-2deffe5291e1 |
| Visual: | <i>g</i> |
| Tooling: | g |
| Version: | 1.0 |

## Dependencies

|  |  |  |
| --- | --- | --- |
| Artifact Type | Symbol | Description |

## Incompatible With

|  |  |  |
| --- | --- | --- |
| Artifact Type | Symbol | Id |

## Influenced By

|  |  |  |
| --- | --- | --- |
| Description | Symbol | Applies To |

## Artifact Files

|  |  |  |
| --- | --- | --- |
| Content Type | File Name | File Content |
| Control | delegable.proto |  |
| Uml | delegable.md |  |

## Code Map

|  |  |  |  |
| --- | --- | --- | --- |
| Map Type | Name | Platform | Location |

## Implementation Map

|  |  |  |  |
| --- | --- | --- | --- |
| Map Type | Name | Platform | Location |

## Resource Map

|  |  |  |  |
| --- | --- | --- | --- |
| Map Type | Name | Location | Description |

|  |  |
| --- | --- |
| Is External: | True |
| Constructor: |  |

## Delegable responds to these Invocations

#### AllowanceRequest

Id: 2e0fd8e5-2090-4c62-b094-232c32a78022

Description: A Request by a party or account to the owner of a token(s) to have the right to perform a delegated behavior on their behalf.

##### Request Message:

AllowanceRequest

Description: The request

###### Request Parameters

|  |  |
| --- | --- |
| Name | Value |
| Quantity | Number of Tokens to be allowed. |

##### Response Message

AllowanceResponse

Description: The response

###### Response Parameters

|  |  |
| --- | --- |
| Name | Value |
| Confirmation | A confirmation receipt or denial be returned to the allowance requestor. |

#### ApproveAllowance

Id: 6d5df99d-2f5e-4c7a-aea4-d2d54176abfd

Description: Same control message as the AllowanceRequest. This could allow for an AllowanceRequest to be forwarded to multiple parties needed to Approve and shield this from the requestor. When all Approvals are obtained, an AllowanceResponse could be sent.

##### Request Message:

ApproveRequest

Description: The request

###### Request Parameters

|  |  |
| --- | --- |
| Name | Value |
| Quantity | Number of Tokens to be allowed. |

##### Response Message

ApproveResponse

Description: The response

###### Response Parameters

|  |  |
| --- | --- |
| Name | Value |
| Confirmation | A confirmation response from the owner approving the an allowance request, indicating a allowance quantity the requestor has the option to invoke the Delegable behaviors on the token(s). |

## Specification Behavior

# Offsetable

### Taxonomy Symbol: off

A token class that implements this behavior is burned or retired with its value being applied to offset another balance. For example, a Carbon Credit can be used to offset a carbon emission to achieve emissions goals like net zero; a 1 mtCO2e emission can be offset by applying a 1mtCO2e credit. The process of applying a credit to lower an emission is called offsetting. This behavior extends the traditional burn or retire behavior by requiring an offset target id so that the token being offset is correlated with the appropriate emission. Once a token is offset, it can no longer be used.

### Example

### Comments

Used in conjunction with CO2e, which allows for offsetting of emissions.

|  |  |
| --- | --- |
| Type: | Behavior |
| Name: | Offsetable |
| Id: | 559c9f31-dd89-4012-a726-40cde5463569 |
| Visual: | <i>off</i> |
| Tooling: | off |
| Version: | 1.0 |

## Dependencies

|  |  |  |
| --- | --- | --- |
| Artifact Type | Symbol | Description |

## Incompatible With

|  |  |  |
| --- | --- | --- |
| Artifact Type | Symbol | Id |

## Influenced By

|  |  |  |
| --- | --- | --- |
| Description | Symbol | Applies To |
| This would allow for an owner to offset on their behalf, which would still offset the owners emissions. Delegable or not, will determine if the OffsetFrom Control will be available in the implementation. | g | [ ] |

## Artifact Files

|  |  |  |
| --- | --- | --- |
| Content Type | File Name | File Content |
| Control | offsetable.proto |  |
| Uml | offsetable.md |  |

## Code Map

|  |  |  |  |
| --- | --- | --- | --- |
| Map Type | Name | Platform | Location |

## Implementation Map

|  |  |  |  |
| --- | --- | --- | --- |
| Map Type | Name | Platform | Location |

## Resource Map

|  |  |  |  |
| --- | --- | --- | --- |
| Map Type | Name | Location | Description |

|  |  |
| --- | --- |
| Is External: | False |
| Constructor: |  |

## Offsetable responds to these Invocations

#### Offset

Id: 2019574d-c8bf-44b6-afb7-cb6eaf74a308

Description: A request to offset a token instance(s) in the class by the owner of the token instance(s), once the token is Offset, invocations of Transfer should be blocked. Optional Quantity field in the request, if not present the percentage if the CO2/Adjustment value represented by the fractional quantity of the token instance will be offset.

##### Request Message:

OffsetRequest

Description: The request to Offset tokens.

###### Request Parameters

|  |  |
| --- | --- |
| Name | Value |
| AppliedTo | The Id of the reported emission that is being offset. |

##### Response Message

OffsetResponse

Description: The response from the request to offset.

###### Response Parameters

|  |  |
| --- | --- |
| Name | Value |
| Confirmation | A confirmation receipt or error may be returned to the invoker based on the outcome of the offset request |

#### OffsetFrom

Id: 47057767-e0ee-4737-993b-698f7baab3ed

Description: Requires Delegable. A request to offset a token instance in the class by a party or account that has allowance to do so. Once the token is Offset, invocations of Transfer should be blocked. Requires a From and Quantity fields in the request.

##### Request Message:

OffsetFromRequest

Description: The request to Offset tokens.

###### Request Parameters

|  |  |
| --- | --- |
| Name | Value |
| From | AccountId from which tokens are offset. |
| AppliedTo | The Id of the reported emission that is being offset. |

##### Response Message

OffsetFromResponse

Description: The response from the request to offset from.

###### Response Parameters

|  |  |
| --- | --- |
| Name | Value |
| Confirmation | A confirmation receipt or error may be returned to the invoker based on the outcome of the offset from request |

### Properties

#### Name: OffsetAppliedTo

Value Description: Records the reported emission Id being offset, like an ESG Emissions Scorecard.

Template Value:

### Invocations

## Specification Behavior

# Roles

### Taxonomy Symbol: r

A token can have behaviors that the class will restrict invocations to a select set of parties or accounts that are members of a role or group. This is a generic behavior that can apply to a token many times to represent many role definitions within the template. This behavior will allow you to define what role(s) to create and what behavior(s) to apply the role to in the TemplateDefinition.

### Example

### Analogies

|  |  |
| --- | --- |
| Name | Description |
| Minters | A role called 'Minters' for a token can have accounts in the role. The MintTo behavior invocation will be bound to the role check to ensure only account in the 'Minters' role are allowed to mint new instances in the class. |
| Burners | A role called 'Burners' for a token can have accounts in the role. The BurnFrom behavior invocation will be bound to the role check to ensure only account in the 'Burners' role are allowed to mint new instances in the class. |

### Comments

Roles has a constructor control that creates roles and applies them to certain behaviors of the token at creation of the class from the template.

|  |  |
| --- | --- |
| Type: | Behavior |
| Name: | Roles |
| Id: | c32726da-9787-4dd8-8de3-d07d1733d0f6 |
| Visual: | <i>r</i> |
| Tooling: | r |
| Version: | 1.0 |

## Dependencies

|  |  |  |
| --- | --- | --- |
| Artifact Type | Symbol | Description |

## Incompatible With

|  |  |  |
| --- | --- | --- |
| Artifact Type | Symbol | Id |

## Influenced By

|  |  |  |
| --- | --- | --- |
| Description | Symbol | Applies To |

## Artifact Files

|  |  |  |
| --- | --- | --- |
| Content Type | File Name | File Content |
| Control | roles.proto |  |
| Uml | roles.md |  |

## Code Map

|  |  |  |  |
| --- | --- | --- | --- |
| Map Type | Name | Platform | Location |
| SourceCode | Open Zeppelin - Roles | EthereumSolidity | https://github.com/OpenZeppelin/openzeppelin-contracts/blob/master/contracts/access/Roles.sol |

## Implementation Map

|  |  |  |  |
| --- | --- | --- | --- |
| Map Type | Name | Platform | Location |

## Resource Map

|  |  |  |  |
| --- | --- | --- | --- |
| Map Type | Name | Location | Description |

|  |  |
| --- | --- |
| Is External: | False |
| Constructor: |  |

## Roles responds to these Invocations

#### RoleCheck

Id: 00a665e3-1dda-441e-8262-5750435c153c

Description: Internal invocation when the applied behavior is called to check if the requestor is a member of the role.

##### Request Message:

IsInRole

Description: The request

###### Request Parameters

|  |  |
| --- | --- |
| Name | Value |
| AccountId | AccountId of the requestor. |

##### Response Message

True/False

Description: The response

###### Response Parameters

|  |  |
| --- | --- |
| Name | Value |
| IsInRole | True/False |

### Properties

#### Name: Role

Value Description: A group or list an account can be a member or be in.

Template Value: Issuers

### Invocations

#### GetRoleMembers

Id:

Description: Request the the list of member accounts in the role.

##### Request

Control Message: GetRoleMembersRequest

Description: The request

###### Parameters

|  |  |
| --- | --- |
| Name | Value |

##### Response

Control Message: GetRoleMembersResponse

Description: The response

###### Parameters

|  |  |
| --- | --- |
| Name | Value |
| Members | Returning the list of accounts in the role. |

#### AddRoleMember

Id: 600357f8-0499-47f8-87a5-eedf4ad034af

Description: Add a member to the group or role property.

##### Request

Control Message: AddRoleMemberRequest

Description: The request

###### Parameters

|  |  |
| --- | --- |
| Name | Value |
| RoleName | Name of the role you are adding a member to. Optional parameter if there is only one role. |
| AccountAddress | Address, name or identifier of the account to be added to the role. |

##### Response

Control Message: AddRoleMemberResponse

Description: The response

###### Parameters

|  |  |
| --- | --- |
| Name | Value |
| Added | True or False. |

#### RemoveRoleMember

Id: 97e160bb-6c60-4f1d-923b-813b07b89638

Description: Remove a member to the group or role property.

##### Request

Control Message: RemoveRoleMemberRequest

Description: The request

###### Parameters

|  |  |
| --- | --- |
| Name | Value |
| RoleName | Name of the role you are adding a member to. Optional parameter if there is only one role. |
| AccountAddress | Address, name or identifier of the account to be removed from the role. |

##### Response

Control Message: RemoveRoleMemberResponse

Description: The response

###### Parameters

|  |  |
| --- | --- |
| Name | Value |
| Added | True or False. |

#### IsInRole

Id: e42b1b16-074a-4d7d-b9f9-f69a2397a21b

Description: Check to see if an account is in the role.

##### Request

Control Message: IsInRoleRequest

Description: The request may be internal only and not exposed externally.

###### Parameters

|  |  |
| --- | --- |
| Name | Value |
| RoleName | Name of the role you are checking membership of. Optional parameter if there is only one role. |
| AccountAddress | Address, name or identifier of the account to be checked. |

##### Response

Control Message: IsInRoleRequestResponse

Description: The response

###### Parameters

|  |  |
| --- | --- |
| Name | Value |
| InRole | True or False. |

#### GetIssuers

Id:

Description: Request the the list of member accounts in the 'Issuers' role.

##### Request

Control Message: GetIssuersRequest

Description: The request

###### Parameters

|  |  |
| --- | --- |
| Name | Value |

##### Response

Control Message: GetIssuersResponse

Description: The response

###### Parameters

|  |  |
| --- | --- |
| Name | Value |
| Members | Returning the list of accounts in the 'Issuers' role. |

#### AddRoleMember

Id: 600357f8-0499-47f8-87a5-eedf4ad034af

Description: Add a member to the group or role property.

##### Request

Control Message: AddRoleMemberRequest

Description: The request

###### Parameters

|  |  |
| --- | --- |
| Name | Value |
| RoleName | Value is always set to 'Issuers' |
| AccountAddress | Address, name or identifier of the account to be added to the 'Issuers' role. |

##### Response

Control Message: AddRoleMemberResponse

Description: The response

###### Parameters

|  |  |
| --- | --- |
| Name | Value |
| Added | True or False. |

#### RemoveRoleMember

Id: 97e160bb-6c60-4f1d-923b-813b07b89638

Description: Remove a member to the group or role property.

##### Request

Control Message: RemoveRoleMemberRequest

Description: The request

###### Parameters

|  |  |
| --- | --- |
| Name | Value |
| RoleName | Always set to 'Issuers' |
| AccountAddress | Address, name or identifier of the account to be removed from the role. |

##### Response

Control Message: RemoveRoleMemberResponse

Description: The response

###### Parameters

|  |  |
| --- | --- |
| Name | Value |
| Added | True or False. |

#### IsInRole

Id: e42b1b16-074a-4d7d-b9f9-f69a2397a21b

Description: Check to see if an account is in the role.

##### Request

Control Message: IsInRoleRequest

Description: The request may be internal only and not exposed externally.

###### Parameters

|  |  |
| --- | --- |
| Name | Value |
| RoleName | Always be bound to 'Issuers' |
| AccountAddress | Address, name or identifier of the account to be checked. |

##### Response

Control Message: IsInRoleRequestResponse

Description: The response

###### Parameters

|  |  |
| --- | --- |
| Name | Value |
| InRole | True or False. |

## Specification Behavior

# Encumberable

### Taxonomy Symbol: e

A token class that implements this behavior will have restrictions preventing certain behaviors like transferable, burnable, etc. from working while it is encumbered. The encumbering party should make a request to encumber, the owner should be notified about the request, and accept the request, which will finalize the encumbrance and send the EncumberResponse message to the requestor.

### Example

For example, a property title's owner may have obtained a loan from a bank to purchase the property. The loan represents a contract between the owner of the property and the bank, this loan encumbers the property title preventing the owner from being able to sell the property, transferable, to another party until the loan is paid off. Paying off the loan will remove the encumber, which will allow transferable to be invoked.

### Analogies

|  |  |
| --- | --- |
| Name | Description |
| Loan | A token can represent an asset that the owner took out a loan to obtain. If so, the token will need to be encumbered by the loan contract preventing the owner from selling the asset until the loan is repaid. |

### Comments

The token definition should have a Encumbered property or structure that may allow only one encumber or allow multiple.

|  |  |
| --- | --- |
| Type: | Behavior |
| Name: | Encumberable |
| Id: | dc8d5961-59e8-4a10-8b38-d9e99394d251 |
| Visual: | <i>e</i> |
| Tooling: | e |
| Version: | 1.0 |

## Dependencies

|  |  |  |
| --- | --- | --- |
| Artifact Type | Symbol | Description |

## Incompatible With

|  |  |  |
| --- | --- | --- |
| Artifact Type | Symbol | Id |

## Influenced By

|  |  |  |
| --- | --- | --- |
| Description | Symbol | Applies To |

## Artifact Files

|  |  |  |
| --- | --- | --- |
| Content Type | File Name | File Content |
| Control | encumberable.proto |  |
| Uml | encumberable.md |  |

## Code Map

|  |  |  |  |
| --- | --- | --- | --- |
| Map Type | Name | Platform | Location |

## Implementation Map

|  |  |  |  |
| --- | --- | --- | --- |
| Map Type | Name | Platform | Location |

## Resource Map

|  |  |  |  |
| --- | --- | --- | --- |
| Map Type | Name | Location | Description |

|  |  |
| --- | --- |
| Is External: | True |
| Constructor: |  |

## Encumberable responds to these Invocations

Binding Is Influenced by Transferable's Invocation TransferFromTransferable's Invocation TransferFrom Intercepts this behavior's invocation.'

#### TransferFrom

Id: 516b4e2f-4a14-4c4f-a6f2-1419d4af35c6

Description: >A transfer request is issued by the encumbering entity that can issue settlement instructions to invoke a transfer from the owner of the token to the party or account provided in the To field of the request. This invocation is influences a call to Remove the Encumberance and requires a check on the Role of the caller as the sole encumber.

##### Request Message:

TransferFromRequest

Description: Settlement details from the encumbrancer

###### Request Parameters

|  |  |
| --- | --- |
| Name | Value |
| From | AccountId to transfer ownership from. |
| To | AccountId to transfer ownership to. |
| Quantity | Number of tokens to transfer. |

##### Response Message

TransferFromResponse

Description: The response

###### Response Parameters

|  |  |
| --- | --- |
| Name | Value |
| Confirmation | A confirmation receipt or error may be returned to the owner based on the outcome of the transfer from request. |

#### RemoveEncumberRequest

Id: 4532c466-bb6d-482a-b2cc-5285ba1f8259

Description: A Request by encumbrancer, perhaps a contract or another token, to remove their encumber or lien from the token. Which should remove any restrictions from behaviors if there are no more encumbers. Only the owner of the encumber can remove their encumber.

##### Request Message:

RemoveEncumberRequest

Description: The request

###### Request Parameters

|  |  |
| --- | --- |
| Name | Value |

##### Response Message

RemoveEncumberResponse

Description: The response

###### Response Parameters

|  |  |
| --- | --- |
| Name | Value |
| Confirmation | A confirmation receipt or denial be returned to the RemoveEncumber requestor. |

#### EncumberRequest

Id: bdc69e47-8320-4f54-8a03-0f54c376e113

Description: A Request by a party or account, perhaps a contract or another token, to encumber the token.

##### Request Message:

EncumberRequest

Description: The request

###### Request Parameters

|  |  |
| --- | --- |
| Name | Value |
| Name of Encumber | Name of the institution requesting the encumber. |
| Identifier | A public key or address for the requestor. |
| Signature | A digital signature or attestation, optional. |

##### Response Message

EncumberResponse

Description: The response

###### Response Parameters

|  |  |
| --- | --- |
| Name | Value |
| Confirmation | A confirmation response from the token for the encumber request. |

#### AcceptEncumberRequest

Id: efd8bb57-4904-481e-976d-8a20a33df602

Description: A Request by a party or account, perhaps a contract or another token, to encumber the token. Once accepted, the token should add a new entry into the Encumbrances property.

##### Request Message:

AcceptEncumberRequest

Description: The request

###### Request Parameters

|  |  |
| --- | --- |
| Name | Value |

##### Response Message

AcceptEncumberResponse

Description: The response

###### Response Parameters

|  |  |
| --- | --- |
| Name | Value |
| Confirmation | A confirmation response returned to the owner of their acceptance. |

### Properties

#### Name: Encumbrances

Value Description: List of Encumbered

Template Value:

### Invocations

#### GetEncumbrancesRequest

Id: 9e39bf6a-74dc-4ca1-a709-5db247aaa31b

Description: The property value.

##### Request

Control Message: GetEncumbrancesRequest

Description:

###### Parameters

|  |  |
| --- | --- |
| Name | Value |

##### Response

Control Message: GetEncumbrancesResponse

Description: Return value

###### Parameters

|  |  |
| --- | --- |
| Name | Value |
| Encumbrances | List of Encumbered |

#### Name: Encumbered

Value Description: True or False

Template Value:

### Invocations

#### GetEncumberedRequest

Id: f35cdfee-d2f4-4a01-bf9b-33774b5df241

Description: The property value.

##### Request

Control Message: GetEncumberedRequest

Description:

###### Parameters

|  |  |
| --- | --- |
| Name | Value |

##### Response

Control Message: GetEncumberedResponse

Description: Return value

###### Parameters

|  |  |
| --- | --- |
| Name | Value |
| Encumbered | True or False |

## Specification Behavior

# Transferable

### Taxonomy Symbol: t

Every token instance has an owner. The Transferable behavior provides the owner the ability to transfer the ownership to another party or account. This behavior is often inferred by other behaviors that might exist like Redeem, Sell, etc. This behavior is Delegable. If the token definition is Delegable, TransferFrom will be available.

### Example

### Analogies

|  |  |
| --- | --- |
| Name | Description |
| Analogy 1 | transferable analogy 1 description |

|  |  |
| --- | --- |
| Type: | Behavior |
| Name: | Transferable |
| Id: | af119e58-6d84-4ca6-9656-75e8d312f038 |
| Visual: | <i>t</i> |
| Tooling: | t |
| Version: | 1.0 |

## Dependencies

|  |  |  |
| --- | --- | --- |
| Artifact Type | Symbol | Description |

## Incompatible With

|  |  |  |
| --- | --- | --- |
| Artifact Type | Symbol | Id |
| Behavior | ~t | a4fa4ca8-6afd-452b-91f5-7103b6fee5e5 |

## Influenced By

|  |  |  |
| --- | --- | --- |
| Description | Symbol | Applies To |
| Roles is common to implement to provide authorization checks for invoking the behavior. Highly Recommended that Role restrictions be applied to Transfer and TransferFrom invocations in situations where the recipient has to meet certain criteria (e.g. Beneficiaries). | r | [ ] |
| If the token is Delegable, TransferFrom should be enabled. | g | [ ] |
| If Compliance is present, a CheckTransferAllowed request has to be made and verified before a Transfer request or a TransferFrom request. | c | [ ] |
| If issuable is present, an AcceptTokenRequest from the token issuer, in response to a RequestTokens, has to be made and verified before a Transfer request. | i | [ ] |
| If offsetable is present, an check on if the token has been offset must be made and if it has, transfer should be denied. | off | [ ] |

## Artifact Files

|  |  |  |
| --- | --- | --- |
| Content Type | File Name | File Content |
| Control | transferable.proto |  |
| Uml | transferable.md |  |

## Code Map

|  |  |  |  |
| --- | --- | --- | --- |
| Map Type | Name | Platform | Location |

## Implementation Map

|  |  |  |  |
| --- | --- | --- | --- |
| Map Type | Name | Platform | Location |

## Resource Map

|  |  |  |  |
| --- | --- | --- | --- |
| Map Type | Name | Location | Description |

|  |  |
| --- | --- |
| Is External: | True |
| Constructor: |  |

## Transferable responds to these Invocations

Binding Is Influenced by Encumberable's Invocation Encumberable's Invocation Intercepts this behavior's invocation.'

#### Encumbered

Id: f35cdfee-d2f4-4a01-bf9b-33774b5df241

Description: Check to see if the token has any encumbrances and if so, prevent transfer.

##### Request Message:

GetEncumberedRequest

Description: Checking the Encumbered value - true or false.

###### Request Parameters

|  |  |
| --- | --- |
| Name | Value |
|  |  |

##### Response Message

True/False

Description: Respond true if the token is encumbered, false if not.

###### Response Parameters

|  |  |
| --- | --- |
| Name | Value |
| Encumbered | True/False |

#### Transfer

Id: 5d4b8f10-7857-4a2f-9b8c-d61e367a6bcc

Description: >A transfer request will invoke a transfer from the owner of the token to the party or account provided in the To field of the request. For fungible or dividable non-fungible tokens, this request may also include value in the Amount field of the request to transfer more than one token of the class in a single request.

##### Request Message:

TransferRequest

Description: The request

###### Request Parameters

|  |  |
| --- | --- |
| Name | Value |
| To | AccountId to transfer ownership to. |
| Quantity | Number of tokens to transfer. |

##### Response Message

TransferResponse

Description: The response

###### Response Parameters

|  |  |
| --- | --- |
| Name | Value |
| Confirmation | A confirmation receipt or error may be returned to the owner based on the outcome of the transfer request. |

#### TransferFrom

Id: 516b4e2f-4a14-4c4f-a6f2-1419d4af35c6

Description: >A transfer request will invoke a transfer from the owner of the token to the party or account provided in the To field of the request. For fungible or dividable non-fungible tokens, this request may also include value in the Amount field of the request to transfer more than one token of the class in a single request.

##### Request Message:

TransferFromRequest

Description: The request

###### Request Parameters

|  |  |
| --- | --- |
| Name | Value |
| From | AccountId to transfer ownership from. |
| To | AccountId to transfer ownership to. |
| Quantity | Number of tokens to transfer. |

##### Response Message

TransferFromResponse

Description: The response

###### Response Parameters

|  |  |
| --- | --- |
| Name | Value |
| Confirmation | A confirmation receipt or error may be returned to the owner based on the outcome of the transfer from request. |

## Specification Behavior

# Transferable

### Taxonomy Symbol: t

Every token instance has an owner. The Transferable behavior provides the owner the ability to transfer the ownership to another party or account. This behavior is often inferred by other behaviors that might exist like Redeem, Sell, etc. This behavior is Delegable. If the token definition is Delegable, TransferFrom will be available.

### Example

### Analogies

|  |  |
| --- | --- |
| Name | Description |
| Analogy 1 | transferable analogy 1 description |

|  |  |
| --- | --- |
| Type: | Behavior |
| Name: | Transferable |
| Id: | af119e58-6d84-4ca6-9656-75e8d312f038 |
| Visual: | <i>t</i> |
| Tooling: | t |
| Version: | 1.0 |

## Dependencies

|  |  |  |
| --- | --- | --- |
| Artifact Type | Symbol | Description |

## Incompatible With

|  |  |  |
| --- | --- | --- |
| Artifact Type | Symbol | Id |
| Behavior | ~t | a4fa4ca8-6afd-452b-91f5-7103b6fee5e5 |

## Influenced By

|  |  |  |
| --- | --- | --- |
| Description | Symbol | Applies To |
| Roles is common to implement to provide authorization checks for invoking the behavior. Highly Recommended that Role restrictions be applied to Transfer and TransferFrom invocations in situations where the recipient has to meet certain criteria (e.g. Beneficiaries). | r | [ ] |
| If the token is Delegable, TransferFrom should be enabled. | g | [ ] |
| If Compliance is present, a CheckTransferAllowed request has to be made and verified before a Transfer request or a TransferFrom request. | c | [ ] |
| If issuable is present, an AcceptTokenRequest from the token issuer, in response to a RequestTokens, has to be made and verified before a Transfer request. | i | [ ] |
| If offsetable is present, an check on if the token has been offset must be made and if it has, transfer should be denied. | off | [ ] |

## Artifact Files

|  |  |  |
| --- | --- | --- |
| Content Type | File Name | File Content |
| Control | transferable.proto |  |
| Uml | transferable.md |  |

## Code Map

|  |  |  |  |
| --- | --- | --- | --- |
| Map Type | Name | Platform | Location |

## Implementation Map

|  |  |  |  |
| --- | --- | --- | --- |
| Map Type | Name | Platform | Location |

## Resource Map

|  |  |  |  |
| --- | --- | --- | --- |
| Map Type | Name | Location | Description |

|  |  |
| --- | --- |
| Is External: | True |
| Constructor: |  |

## Transferable responds to these Invocations

Binding Is Influenced by Roles's Invocation RoleCheckRoles's Invocation RoleCheck Intercepts this behavior's invocation.'

#### RoleCheck

Id: 00a665e3-1dda-441e-8262-5750435c153c

Description: Check to see if the account is the sole encumbrancer by checking the Encumbrances property for the caller's account.

##### Request Message:

IsInRole

Description: Checking the Encumbrances property.

###### Request Parameters

|  |  |
| --- | --- |
| Name | Value |
| AccountId | AccountId of the requestor. |

##### Response Message

True/False

Description: Respond true if the account is the encumbrancer.

###### Response Parameters

|  |  |
| --- | --- |
| Name | Value |
| IsInRole | True/False |

#### TransferFrom

Id: 516b4e2f-4a14-4c4f-a6f2-1419d4af35c6

Description: >A transfer request will invoke a transfer from the owner of the token to the party or account provided in the To field of the request. For fungible or dividable non-fungible tokens, this request may also include value in the Amount field of the request to transfer more than one token of the class in a single request.

##### Request Message:

TransferFromRequest

Description: The request

###### Request Parameters

|  |  |
| --- | --- |
| Name | Value |
| From | AccountId to transfer ownership from. |
| To | AccountId to transfer ownership to. |
| Quantity | Number of tokens to transfer. |

##### Response Message

TransferFromResponse

Description: The response

###### Response Parameters

|  |  |
| --- | --- |
| Name | Value |
| Confirmation | A confirmation receipt or error may be returned to the owner based on the outcome of the transfer from request. |

Binding Is Influenced by Roles's Invocation RoleCheckRoles's Invocation RoleCheck Intercepts this behavior's invocation.'

#### RoleCheck

Id: 00a665e3-1dda-441e-8262-5750435c153c

Description: Check to see if the account is in the Role called 'Issuers'

##### Request Message:

IsInRole

Description: Checking the 'Issuers' role.

###### Request Parameters

|  |  |
| --- | --- |
| Name | Value |
| AccountId | AccountId of the requestor. |

##### Response Message

True/False

Description: Respond true if the account is in the 'Issuers' role.

###### Response Parameters

|  |  |
| --- | --- |
| Name | Value |
| IsInRole | True/False |

#### MintTo

Id: 70499b23-a1dd-4c87-90d6-6e45400f28b5

Description: A request to create new token instances in the class by the owner or a party or account in a role that is granted this permission to another party or account. Requires a To and Quantity fields in the request.

##### Request Message:

MintToRequest

Description: The request

###### Request Parameters

|  |  |
| --- | --- |
| Name | Value |
| ToAccount | Account Id to mint the tokens to. |
| Quantity | Number of new tokens to create. |

##### Response Message

MintToResponse

Description: The response

###### Response Parameters

|  |  |
| --- | --- |
| Name | Value |
| Confirmation | A confirmation receipt or error may be returned to the invoker based on the outcome of the MintTo request. |

Binding Is Influenced by Roles's Invocation RoleCheckRoles's Invocation RoleCheck Intercepts this behavior's invocation.'

#### RoleCheck

Id: 00a665e3-1dda-441e-8262-5750435c153c

Description: Check to see if the account is in the Role called 'Issuer'

##### Request Message:

IsInRole

Description: Checking the 'Issuer' role.

###### Request Parameters

|  |  |
| --- | --- |
| Name | Value |
| AccountId | AccountId of the requestor. |

##### Response Message

True/False

Description: Respond true if the account is in the 'Issuer' role.

###### Response Parameters

|  |  |
| --- | --- |
| Name | Value |
| IsInRole | True/False |

#### Revoke

Id: dc133e8d-3be9-4aa2-8183-57a38429e8fa

Description: A request to revoke a token.

##### Request Message:

RevokeRequest

Description: The request must be made by the issuer determined by a role check.

###### Request Parameters

|  |  |
| --- | --- |
| Name | Value |

##### Response Message

RevokeResponse

Description: The response, successful if the invoker is the issuer.

###### Response Parameters

|  |  |
| --- | --- |
| Name | Value |
| Confirmation | A confirmation receipt or error may be returned to the invoker based on the outcome of the mint request. |

Binding Is Influenced by Roles's Invocation RoleCheckRoles's Invocation RoleCheck Intercepts this behavior's invocation.'

#### RoleCheck

Id: 00a665e3-1dda-441e-8262-5750435c153c

Description: Check to see if the account is in the Role called 'Issuer'

##### Request Message:

IsInRole

Description: Checking the 'Issuer' role.

###### Request Parameters

|  |  |
| --- | --- |
| Name | Value |
| AccountId | AccountId of the requestor. |

##### Response Message

True/False

Description: Respond true if the account is in the 'Issuer' role.

###### Response Parameters

|  |  |
| --- | --- |
| Name | Value |
| IsInRole | True/False |

#### SetReplacement

Id: 2a90d152-699b-4b85-a0e5-5436dae4650e

Description: Only the issuer can set the Issued Amount and is typically done during construction not after creation. A role check for issuer is required for invocation.

##### Request Message:

SetReplacementRequest

Description: The request

###### Request Parameters

|  |  |
| --- | --- |
| Name | Value |
| ReplacesId | Set the Id of the token being replaced. |
| ReplacementDate | Set the date of replacement. |
| ReplacementNotes | Record notes about why the token is being replaced. |

##### Response Message

SetReplacementResponse

Description: The response

###### Response Parameters

|  |  |
| --- | --- |
| Name | Value |
| Confirmation | Returning the value of the set request. |

#### Transfer

Id: 5d4b8f10-7857-4a2f-9b8c-d61e367a6bcc

Description: >A transfer request will invoke a transfer from the owner of the token to the party or account provided in the To field of the request. For fungible or dividable non-fungible tokens, this request may also include value in the Amount field of the request to transfer more than one token of the class in a single request.

##### Request Message:

TransferRequest

Description: The request

###### Request Parameters

|  |  |
| --- | --- |
| Name | Value |
| To | AccountId to transfer ownership to. |
| Quantity | Number of tokens to transfer. |

##### Response Message

TransferResponse

Description: The response

###### Response Parameters

|  |  |
| --- | --- |
| Name | Value |
| Confirmation | A confirmation receipt or error may be returned to the owner based on the outcome of the transfer request. |

## Specification Behavior

# Mintable

### Taxonomy Symbol: m

A token class that implements this behavior will support the minting or issuing of new token instances in the class. These new tokens can be minted and belong to the owner or minted to another account. This behavior may be invalidated by a restrictive behavior like Singleton, where only a single instance of the token can exist. Mintable is technically delegable, but it's delegation should be controlled by a behavior like Roles.

### Example

A consortium of oil producers needs to create tokens for each barrel of oil they are putting on the market to trade. There are separate classes of tokens for each grade of oil. Producers of barrels will need be have the ability to mint new tokens in order to facilitate the trading of them in the supply chain.

### Analogies

|  |  |
| --- | --- |
| Name | Description |
| SKU | A token class can represent a particular item SKU, where the manufacturer of the item has the ability to mint or issue new inventory of the SKU into the supply chain. |

|  |  |
| --- | --- |
| Type: | Behavior |
| Name: | Mintable |
| Id: | f9224e90-3cab-45bf-b5dc-0175121e2ead |
| Visual: | <i>m</i> |
| Tooling: | m |
| Version: | 1.0 |

## Dependencies

|  |  |  |
| --- | --- | --- |
| Artifact Type | Symbol | Description |

## Incompatible With

|  |  |  |
| --- | --- | --- |
| Artifact Type | Symbol | Id |

## Influenced By

|  |  |  |
| --- | --- | --- |
| Description | Symbol | Applies To |
| Roles is common to implement to provide authorization checks for invoking the behavior. Highly Recommended that Role restrictions be applied to MintTo invocations. | r | [ ] |
| If Compliance is present, a CheckMintAllowed request has to be made and verified before a Mint request or a MintTo request. | c | [ ] |

## Artifact Files

|  |  |  |
| --- | --- | --- |
| Content Type | File Name | File Content |
| Control | mintable.proto |  |
| Uml | mintable.md |  |

## Code Map

|  |  |  |  |
| --- | --- | --- | --- |
| Map Type | Name | Platform | Location |
| SourceCode | Open Zeppelin | EthereumSolidity | https://github.com/OpenZeppelin/openzeppelin-contracts/blob/master/contracts/token/ERC20/ERC20Mintable.sol |

## Implementation Map

|  |  |  |  |
| --- | --- | --- | --- |
| Map Type | Name | Platform | Location |
| Implementation | Implementation 1 | ChaincodeGo |  |

## Resource Map

|  |  |  |  |
| --- | --- | --- | --- |
| Map Type | Name | Location | Description |
| Resource | Regulation Reference 1 |  |  |

|  |  |
| --- | --- |
| Is External: | False |
| Constructor: |  |

## Mintable responds to these Invocations

Binding Is Influenced by Roles's Invocation RoleCheckRoles's Invocation RoleCheck Intercepts this behavior's invocation.'

#### RoleCheck

Id: 00a665e3-1dda-441e-8262-5750435c153c

Description: Check to see if the account is the sole encumbrancer by checking the Encumbrances property for the caller's account.

##### Request Message:

IsInRole

Description: Checking the Encumbrances property.

###### Request Parameters

|  |  |
| --- | --- |
| Name | Value |
| AccountId | AccountId of the requestor. |

##### Response Message

True/False

Description: Respond true if the account is the encumbrancer.

###### Response Parameters

|  |  |
| --- | --- |
| Name | Value |
| IsInRole | True/False |

#### TransferFrom

Id: 516b4e2f-4a14-4c4f-a6f2-1419d4af35c6

Description: >A transfer request will invoke a transfer from the owner of the token to the party or account provided in the To field of the request. For fungible or dividable non-fungible tokens, this request may also include value in the Amount field of the request to transfer more than one token of the class in a single request.

##### Request Message:

TransferFromRequest

Description: The request

###### Request Parameters

|  |  |
| --- | --- |
| Name | Value |
| From | AccountId to transfer ownership from. |
| To | AccountId to transfer ownership to. |
| Quantity | Number of tokens to transfer. |

##### Response Message

TransferFromResponse

Description: The response

###### Response Parameters

|  |  |
| --- | --- |
| Name | Value |
| Confirmation | A confirmation receipt or error may be returned to the owner based on the outcome of the transfer from request. |

Binding Is Influenced by Roles's Invocation RoleCheckRoles's Invocation RoleCheck Intercepts this behavior's invocation.'

#### RoleCheck

Id: 00a665e3-1dda-441e-8262-5750435c153c

Description: Check to see if the account is in the Role called 'Issuers'

##### Request Message:

IsInRole

Description: Checking the 'Issuers' role.

###### Request Parameters

|  |  |
| --- | --- |
| Name | Value |
| AccountId | AccountId of the requestor. |

##### Response Message

True/False

Description: Respond true if the account is in the 'Issuers' role.

###### Response Parameters

|  |  |
| --- | --- |
| Name | Value |
| IsInRole | True/False |

#### MintTo

Id: 70499b23-a1dd-4c87-90d6-6e45400f28b5

Description: A request to create new token instances in the class by the owner or a party or account in a role that is granted this permission to another party or account. Requires a To and Quantity fields in the request.

##### Request Message:

MintToRequest

Description: The request

###### Request Parameters

|  |  |
| --- | --- |
| Name | Value |
| ToAccount | Account Id to mint the tokens to. |
| Quantity | Number of new tokens to create. |

##### Response Message

MintToResponse

Description: The response

###### Response Parameters

|  |  |
| --- | --- |
| Name | Value |
| Confirmation | A confirmation receipt or error may be returned to the invoker based on the outcome of the MintTo request. |

Binding Is Influenced by Roles's Invocation RoleCheckRoles's Invocation RoleCheck Intercepts this behavior's invocation.'

#### RoleCheck

Id: 00a665e3-1dda-441e-8262-5750435c153c

Description: Check to see if the account is in the Role called 'Issuer'

##### Request Message:

IsInRole

Description: Checking the 'Issuer' role.

###### Request Parameters

|  |  |
| --- | --- |
| Name | Value |
| AccountId | AccountId of the requestor. |

##### Response Message

True/False

Description: Respond true if the account is in the 'Issuer' role.

###### Response Parameters

|  |  |
| --- | --- |
| Name | Value |
| IsInRole | True/False |

#### Revoke

Id: dc133e8d-3be9-4aa2-8183-57a38429e8fa

Description: A request to revoke a token.

##### Request Message:

RevokeRequest

Description: The request must be made by the issuer determined by a role check.

###### Request Parameters

|  |  |
| --- | --- |
| Name | Value |

##### Response Message

RevokeResponse

Description: The response, successful if the invoker is the issuer.

###### Response Parameters

|  |  |
| --- | --- |
| Name | Value |
| Confirmation | A confirmation receipt or error may be returned to the invoker based on the outcome of the mint request. |

Binding Is Influenced by Roles's Invocation RoleCheckRoles's Invocation RoleCheck Intercepts this behavior's invocation.'

#### RoleCheck

Id: 00a665e3-1dda-441e-8262-5750435c153c

Description: Check to see if the account is in the Role called 'Issuer'

##### Request Message:

IsInRole

Description: Checking the 'Issuer' role.

###### Request Parameters

|  |  |
| --- | --- |
| Name | Value |
| AccountId | AccountId of the requestor. |

##### Response Message

True/False

Description: Respond true if the account is in the 'Issuer' role.

###### Response Parameters

|  |  |
| --- | --- |
| Name | Value |
| IsInRole | True/False |

#### SetReplacement

Id: 2a90d152-699b-4b85-a0e5-5436dae4650e

Description: Only the issuer can set the Issued Amount and is typically done during construction not after creation. A role check for issuer is required for invocation.

##### Request Message:

SetReplacementRequest

Description: The request

###### Request Parameters

|  |  |
| --- | --- |
| Name | Value |
| ReplacesId | Set the Id of the token being replaced. |
| ReplacementDate | Set the date of replacement. |
| ReplacementNotes | Record notes about why the token is being replaced. |

##### Response Message

SetReplacementResponse

Description: The response

###### Response Parameters

|  |  |
| --- | --- |
| Name | Value |
| Confirmation | Returning the value of the set request. |

#### Mint

Id: 3ddf15db-c919-4f72-a57b-d089931bc901

Description: A request to create new token instances in the class by the owner or a party or account in a role that is granted this permission. Minted tokens using this invocation will be owned by the owner or token pool account. Requires a Quantity field in the request.

##### Request Message:

MintRequest

Description: The request

###### Request Parameters

|  |  |
| --- | --- |
| Name | Value |
| Quantity | Number of new tokens to create. |

##### Response Message

MintResponse

Description: The response

###### Response Parameters

|  |  |
| --- | --- |
| Name | Value |
| Confirmation | A confirmation receipt or error may be returned to the invoker based on the outcome of the mint request. |

## Specification Behavior

# Revokable

### Taxonomy Symbol: v

This token has a controlling a central party, the issuer, is able to retire/burn tokens that it has issued, regardless of owner. If this behavior is paired with the replacement property set, it can support the adjustments requirements needed for some carbon removal offset requirements.

### Example

A Carbon Dioxide Removal Credit that is issued for one amount that needs to be adjusted can be revoked and replaced by another token that reflects the adjusted carbon amount.

|  |  |
| --- | --- |
| Type: | Behavior |
| Name: | Revokable |
| Id: | ffaee29b-f599-4812-9914-56693ab32532 |
| Visual: | <i>v</i> |
| Tooling: | v |
| Version: | 1.0 |

## Dependencies

|  |  |  |
| --- | --- | --- |
| Artifact Type | Symbol | Description |

## Incompatible With

|  |  |  |
| --- | --- | --- |
| Artifact Type | Symbol | Id |

## Influenced By

|  |  |  |
| --- | --- | --- |
| Description | Symbol | Applies To |
| The token should have an issuer role where only the issuer is able to revoke. | r | [ ] |

## Artifact Files

|  |  |  |
| --- | --- | --- |
| Content Type | File Name | File Content |
| Control | revokable.proto |  |
| Uml | revokable.md |  |

## Code Map

|  |  |  |  |
| --- | --- | --- | --- |
| Map Type | Name | Platform | Location |

## Implementation Map

|  |  |  |  |
| --- | --- | --- | --- |
| Map Type | Name | Platform | Location |

## Resource Map

|  |  |  |  |
| --- | --- | --- | --- |
| Map Type | Name | Location | Description |

|  |  |
| --- | --- |
| Is External: | True |
| Constructor: |  |

## Revokable responds to these Invocations

Binding Is Influenced by Roles's Invocation RoleCheckRoles's Invocation RoleCheck Intercepts this behavior's invocation.'

#### RoleCheck

Id: 00a665e3-1dda-441e-8262-5750435c153c

Description: Check to see if the account is the sole encumbrancer by checking the Encumbrances property for the caller's account.

##### Request Message:

IsInRole

Description: Checking the Encumbrances property.

###### Request Parameters

|  |  |
| --- | --- |
| Name | Value |
| AccountId | AccountId of the requestor. |

##### Response Message

True/False

Description: Respond true if the account is the encumbrancer.

###### Response Parameters

|  |  |
| --- | --- |
| Name | Value |
| IsInRole | True/False |

#### TransferFrom

Id: 516b4e2f-4a14-4c4f-a6f2-1419d4af35c6

Description: >A transfer request will invoke a transfer from the owner of the token to the party or account provided in the To field of the request. For fungible or dividable non-fungible tokens, this request may also include value in the Amount field of the request to transfer more than one token of the class in a single request.

##### Request Message:

TransferFromRequest

Description: The request

###### Request Parameters

|  |  |
| --- | --- |
| Name | Value |
| From | AccountId to transfer ownership from. |
| To | AccountId to transfer ownership to. |
| Quantity | Number of tokens to transfer. |

##### Response Message

TransferFromResponse

Description: The response

###### Response Parameters

|  |  |
| --- | --- |
| Name | Value |
| Confirmation | A confirmation receipt or error may be returned to the owner based on the outcome of the transfer from request. |

Binding Is Influenced by Roles's Invocation RoleCheckRoles's Invocation RoleCheck Intercepts this behavior's invocation.'

#### RoleCheck

Id: 00a665e3-1dda-441e-8262-5750435c153c

Description: Check to see if the account is in the Role called 'Issuers'

##### Request Message:

IsInRole

Description: Checking the 'Issuers' role.

###### Request Parameters

|  |  |
| --- | --- |
| Name | Value |
| AccountId | AccountId of the requestor. |

##### Response Message

True/False

Description: Respond true if the account is in the 'Issuers' role.

###### Response Parameters

|  |  |
| --- | --- |
| Name | Value |
| IsInRole | True/False |

#### MintTo

Id: 70499b23-a1dd-4c87-90d6-6e45400f28b5

Description: A request to create new token instances in the class by the owner or a party or account in a role that is granted this permission to another party or account. Requires a To and Quantity fields in the request.

##### Request Message:

MintToRequest

Description: The request

###### Request Parameters

|  |  |
| --- | --- |
| Name | Value |
| ToAccount | Account Id to mint the tokens to. |
| Quantity | Number of new tokens to create. |

##### Response Message

MintToResponse

Description: The response

###### Response Parameters

|  |  |
| --- | --- |
| Name | Value |
| Confirmation | A confirmation receipt or error may be returned to the invoker based on the outcome of the MintTo request. |

Binding Is Influenced by Roles's Invocation RoleCheckRoles's Invocation RoleCheck Intercepts this behavior's invocation.'

#### RoleCheck

Id: 00a665e3-1dda-441e-8262-5750435c153c

Description: Check to see if the account is in the Role called 'Issuer'

##### Request Message:

IsInRole

Description: Checking the 'Issuer' role.

###### Request Parameters

|  |  |
| --- | --- |
| Name | Value |
| AccountId | AccountId of the requestor. |

##### Response Message

True/False

Description: Respond true if the account is in the 'Issuer' role.

###### Response Parameters

|  |  |
| --- | --- |
| Name | Value |
| IsInRole | True/False |

#### Revoke

Id: dc133e8d-3be9-4aa2-8183-57a38429e8fa

Description: A request to revoke a token.

##### Request Message:

RevokeRequest

Description: The request must be made by the issuer determined by a role check.

###### Request Parameters

|  |  |
| --- | --- |
| Name | Value |

##### Response Message

RevokeResponse

Description: The response, successful if the invoker is the issuer.

###### Response Parameters

|  |  |
| --- | --- |
| Name | Value |
| Confirmation | A confirmation receipt or error may be returned to the invoker based on the outcome of the mint request. |

Binding Is Influenced by Roles's Invocation RoleCheckRoles's Invocation RoleCheck Intercepts this behavior's invocation.'

#### RoleCheck

Id: 00a665e3-1dda-441e-8262-5750435c153c

Description: Check to see if the account is in the Role called 'Issuer'

##### Request Message:

IsInRole

Description: Checking the 'Issuer' role.

###### Request Parameters

|  |  |
| --- | --- |
| Name | Value |
| AccountId | AccountId of the requestor. |

##### Response Message

True/False

Description: Respond true if the account is in the 'Issuer' role.

###### Response Parameters

|  |  |
| --- | --- |
| Name | Value |
| IsInRole | True/False |

#### SetReplacement

Id: 2a90d152-699b-4b85-a0e5-5436dae4650e

Description: Only the issuer can set the Issued Amount and is typically done during construction not after creation. A role check for issuer is required for invocation.

##### Request Message:

SetReplacementRequest

Description: The request

###### Request Parameters

|  |  |
| --- | --- |
| Name | Value |
| ReplacesId | Set the Id of the token being replaced. |
| ReplacementDate | Set the date of replacement. |
| ReplacementNotes | Record notes about why the token is being replaced. |

##### Response Message

SetReplacementResponse

Description: The response

###### Response Parameters

|  |  |
| --- | --- |
| Name | Value |
| Confirmation | Returning the value of the set request. |

## Offsetable Supply Control

|  |  |
| --- | --- |
| Type: | BehaviorGroup |
| Name: | Offsetable Supply Control |
| Id: | d7f7aa2c-0488-482c-afd9-74f631e8a113 |
| Visual: | <i>OSC</i> |
| Tooling: | OSC |
| Version: | 1.0 |

## Definition

A token class that implements this behavior will provide controls to increase and decrease supply of tokens within the class. Additionally, it will include the ability to support a role, like Issuers, that will be allowed to invoke the Mintable behavior. Accounts can be added to the role and will be able to mint tokens in the class. The owner of an instance can offset the token which burns or retires the token, but requires the the Id of the item being offset be supplied to be successfully be offset. This provides correlation between the two items.

## Example

## Analogies

|  |  |
| --- | --- |
| Name | Description |
| Central Bank | Implementing monetary policy for this token. |

## Comments

Define a Issuers role and apply the role to the mintable behavior.

## Dependencies

|  |  |  |
| --- | --- | --- |
| Artifact Type | Symbol | Description |

## Incompatible With

|  |  |  |
| --- | --- | --- |
| Artifact Type | Symbol | Id |
| Behavior | s | c1189d7a-e142-4504-bf26-44c35b76c9d6 |

## Influenced By

|  |  |  |
| --- | --- | --- |
| Description | Symbol | Applies To |
| Create a Issuers Role and apply it to the Mintable behavior to provide authorization checks for invoking the behavior. | r | [ ] |

## Artifact Files

|  |  |  |
| --- | --- | --- |
| Content Type | File Name | File Content |
| Control | offsetable-supply-control.proto |  |
| Uml | offsetable-supply-control.md |  |

## Code Map

|  |  |  |  |
| --- | --- | --- | --- |
| Map Type | Name | Platform | Location |

## Implementation Map

|  |  |  |  |
| --- | --- | --- | --- |
| Map Type | Name | Platform | Location |

## Resource Map

|  |  |  |  |
| --- | --- | --- | --- |
| Map Type | Name | Location | Description |

The behaviors belonging to this group are included in the Behaviors section of this specification.

## Specification Property Set

## Core Carbon Principles

|  |  |
| --- | --- |
| Type: | PropertySet |
| Name: | Core Carbon Principles |
| Id: | 3b67dfe4-a22d-4e45-a7b5-69a2b00ff982 |
| Visual: | &phi;<i>CCP</i> |
| Tooling: | phCCP |
| Version: | 1.0 |

## Definition

This property set includes the Core Carbon Principles as outlined in the TSVCM about carbon benefit value and the links to the verifying contract and ecological project, benefit sub-project and the claim that is the source of the asset value.

## Example

An ecological project produces carbon benefit claims that once verified are turned into a digital asset or token that represents the intangible value if the benefit claim, in this case a CCP Token. This can represent a widely used climate based claim, like a carbon credit or representing a reduction or a removal of carbon.

## Analogies

|  |  |
| --- | --- |
| Name | Description |

## Dependencies

|  |  |  |
| --- | --- | --- |
| Artifact Type | Symbol | Description |
| PropertySet | phDR | The date range is included in this property set. |

## Incompatible With

|  |  |  |
| --- | --- | --- |
| Artifact Type | Symbol | Id |

## Influenced By

|  |  |  |
| --- | --- | --- |
| Description | Symbol | Applies To |
| Roles should be used to control what accounts can update or modify property values. | r | [ ] |

## Artifact Files

|  |  |  |
| --- | --- | --- |
| Content Type | File Name | File Content |
| Control | core-carbon-principles.proto |  |
| Uml | core-carbon-principles.md |  |

## Code Map

|  |  |  |  |
| --- | --- | --- | --- |
| Map Type | Name | Platform | Location |

## Implementation Map

|  |  |  |  |
| --- | --- | --- | --- |
| Map Type | Name | Platform | Location |

## Resource Map

|  |  |  |  |
| --- | --- | --- | --- |
| Map Type | Name | Location | Description |

|  |  |
| --- | --- |
| Property Set Representation Type | Description |
| Common | This property set's value is common or shared for all token instances in the class. Meaning all tokens in the class will share the same value of the property set. |

## Properties

### Property Name: CoreCarbonPrinciples

Property Value Description: Contains the values for the principles.

Template Value is set to:

## CoreCarbonPrinciples responds to these Invocations

## Properties

### Property Name: CoreCarbonPrinciples

Property Value Description: Contains the values for the CoreCarbonPrinciples.

Template Value is set to:

## CoreCarbonPrinciples responds to these Invocations

## Properties

### Property Name: AssetId

Property Value Description: typically the issuing verifiers master id or serial number that resides on their registry system. Could be empty or the same as the token's id if not needed.

Template Value is set to:

## AssetId responds to these Invocations

### Property Name: IssuanceDate

Property Value Description: Refers to the date of issuance usually in the DD/MM/YYYY or MM/DD/YYYY.

Template Value is set to:

## IssuanceDate responds to these Invocations

### Property Name: GenerationType

Property Value Description: An ecological product can be a generated value based on verified historical results or ex-ante, meaning a predicted result. See the enum type in ecological-asset.proto for example.

Template Value is set to:

## GenerationType responds to these Invocations

### Property Name: VerificationStandard

Property Value Description: The verification standard used to determine and issue a ecological benefit token. These can be a voluntary or compliance/regulatory standard. See the ecological-asset.proto enum for an example.

Template Value is set to:

## VerificationStandard responds to these Invocations

### Property Name: Leakage

Property Value Description: A decrease in sequestration or an increase in emissions outside the boundaries of project, program activities resulting from project, and/or program implementation. Leakage may be caused by shifting of the activities of people present in the project area or by market effects whereby emission reductions are countered by emissions created by shifts in supply of and demand for the products and services affected by the project.

Template Value is set to:

## Leakage responds to these Invocations

### Property Name: Additionality

Property Value Description: A score for the principle that a project activity is additional if the resulting emission reductions are lower than what would have happened in the absence of the activity.

Template Value is set to:

## Additionality responds to these Invocations

### Property Name: ReferenceToBenefitProjectClaim

Property Value Description: A compound reference to the full id path for the benefit claim data: projectId/modularBenefitProjectId/claimId.

Template Value is set to:

## ReferenceToBenefitProjectClaim responds to these Invocations

### Property Name: ReferenceToVerificationContractProcessedClaim

Property Value Description: A reference to the full id path for the verification contract/processedClaims/ProcessedClaimId.

Template Value is set to:

## ReferenceToVerificationContractProcessedClaim responds to these Invocations

## Properties

### Property Name: AssetId

Property Value Description: typically the issuing verifiers master id or serial number that resides on their registry system. Could be empty or the same as the token's id if not needed.

Template Value is set to:

## AssetId responds to these Invocations

### Property Name: IssuanceDate

Property Value Description: Refers to the date of issuance usually in the DD/MM/YYYY or MM/DD/YYYY.

Template Value is set to:

## IssuanceDate responds to these Invocations

### Property Name: GenerationType

Property Value Description: An ecological product can be a generated value based on verified historical results or ex-ante, meaning a predicted result. See the enum type in ecological-asset.proto for example.

Template Value is set to:

## GenerationType responds to these Invocations

### Property Name: VerificationStandard

Property Value Description: The verification standard used to determine and issue a ecological benefit token. These can be a voluntary or compliance/regulatory standard. See the ecological-asset.proto enum for an example.

Template Value is set to:

## VerificationStandard responds to these Invocations

### Property Name: Leakage

Property Value Description: A decrease in sequestration or an increase in emissions outside the boundaries of project, program activities resulting from project, and/or program implementation. Leakage may be caused by shifting of the activities of people present in the project area or by market effects whereby emission reductions are countered by emissions created by shifts in supply of and demand for the products and services affected by the project.

Template Value is set to:

## Leakage responds to these Invocations

### Property Name: Additionality

Property Value Description: A score for the principle that a project activity is additional if the resulting emission reductions are lower than what would have happened in the absence of the activity.

Template Value is set to:

## Additionality responds to these Invocations

### Property Name: ReferenceToBenefitProjectClaim

Property Value Description: A compound reference to the full id path for the benefit claim data: projectId/modularBenefitProjectId/claimId.

Template Value is set to:

## ReferenceToBenefitProjectClaim responds to these Invocations

### Property Name: ReferenceToVerificationContractProcessedClaim

Property Value Description: A reference to the full id path for the verification contract/processedClaims/ProcessedClaimId.

Template Value is set to:

## ReferenceToVerificationContractProcessedClaim responds to these Invocations

## Properties

### Property Name: AssetId

Property Value Description: typically the issuing verifiers master id or serial number that resides on their registry system. Could be empty or the same as the token's id if not needed.

Template Value is set to:

## AssetId responds to these Invocations

### Property Name: IssuanceDate

Property Value Description: Refers to the date of issuance usually in the DD/MM/YYYY or MM/DD/YYYY.

Template Value is set to:

## IssuanceDate responds to these Invocations

### Property Name: GenerationType

Property Value Description: An ecological product can be a generated value based on verified historical results or ex-ante, meaning a predicted result. See the enum type in ecological-asset.proto for example.

Template Value is set to:

## GenerationType responds to these Invocations

### Property Name: VerificationStandard

Property Value Description: The verification standard used to determine and issue a ecological benefit token. These can be a voluntary or compliance/regulatory standard. See the ecological-asset.proto enum for an example.

Template Value is set to:

## VerificationStandard responds to these Invocations

### Property Name: Leakage

Property Value Description: A decrease in sequestration or an increase in emissions outside the boundaries of project, program activities resulting from project, and/or program implementation. Leakage may be caused by shifting of the activities of people present in the project area or by market effects whereby emission reductions are countered by emissions created by shifts in supply of and demand for the products and services affected by the project.

Template Value is set to:

## Leakage responds to these Invocations

### Property Name: Additionality

Property Value Description: A score for the principle that a project activity is additional if the resulting emission reductions are lower than what would have happened in the absence of the activity.

Template Value is set to:

## Additionality responds to these Invocations

### Property Name: ReferenceToBenefitProjectClaim

Property Value Description: A compound reference to the full id path for the benefit claim data: projectId/modularBenefitProjectId/claimId.

Template Value is set to:

## ReferenceToBenefitProjectClaim responds to these Invocations

### Property Name: ReferenceToVerificationContractProcessedClaim

Property Value Description: A reference to the full id path for the verification contract/processedClaims/ProcessedClaimId.

Template Value is set to:

## ReferenceToVerificationContractProcessedClaim responds to these Invocations

## Properties

### Property Name: AssetId

Property Value Description: typically the issuing verifiers master id or serial number that resides on their registry system. Could be empty or the same as the token's id if not needed.

Template Value is set to:

## AssetId responds to these Invocations

### Property Name: IssuanceDate

Property Value Description: Refers to the date of issuance usually in the DD/MM/YYYY or MM/DD/YYYY.

Template Value is set to:

## IssuanceDate responds to these Invocations

### Property Name: GenerationType

Property Value Description: An ecological product can be a generated value based on verified historical results or ex-ante, meaning a predicted result. See the enum type in ecological-asset.proto for example.

Template Value is set to:

## GenerationType responds to these Invocations

### Property Name: VerificationStandard

Property Value Description: The verification standard used to determine and issue a ecological benefit token. These can be a voluntary or compliance/regulatory standard. See the ecological-asset.proto enum for an example.

Template Value is set to:

## VerificationStandard responds to these Invocations

### Property Name: Leakage

Property Value Description: A decrease in sequestration or an increase in emissions outside the boundaries of project, program activities resulting from project, and/or program implementation. Leakage may be caused by shifting of the activities of people present in the project area or by market effects whereby emission reductions are countered by emissions created by shifts in supply of and demand for the products and services affected by the project.

Template Value is set to:

## Leakage responds to these Invocations

### Property Name: Additionality

Property Value Description: A score for the principle that a project activity is additional if the resulting emission reductions are lower than what would have happened in the absence of the activity.

Template Value is set to:

## Additionality responds to these Invocations

### Property Name: ReferenceToBenefitProjectClaim

Property Value Description: A compound reference to the full id path for the benefit claim data: projectId/modularBenefitProjectId/claimId.

Template Value is set to:

## ReferenceToBenefitProjectClaim responds to these Invocations

### Property Name: ReferenceToVerificationContractProcessedClaim

Property Value Description: A reference to the full id path for the verification contract/processedClaims/ProcessedClaimId.

Template Value is set to:

## ReferenceToVerificationContractProcessedClaim responds to these Invocations

## Properties

### Property Name: AssetId

Property Value Description: typically the issuing verifiers master id or serial number that resides on their registry system. Could be empty or the same as the token's id if not needed.

Template Value is set to:

## AssetId responds to these Invocations

### Property Name: IssuanceDate

Property Value Description: Refers to the date of issuance usually in the DD/MM/YYYY or MM/DD/YYYY.

Template Value is set to:

## IssuanceDate responds to these Invocations

### Property Name: GenerationType

Property Value Description: An ecological product can be a generated value based on verified historical results or ex-ante, meaning a predicted result. See the enum type in ecological-asset.proto for example.

Template Value is set to:

## GenerationType responds to these Invocations

### Property Name: VerificationStandard

Property Value Description: The verification standard used to determine and issue a ecological benefit token. These can be a voluntary or compliance/regulatory standard. See the ecological-asset.proto enum for an example.

Template Value is set to:

## VerificationStandard responds to these Invocations

### Property Name: Leakage

Property Value Description: A decrease in sequestration or an increase in emissions outside the boundaries of project, program activities resulting from project, and/or program implementation. Leakage may be caused by shifting of the activities of people present in the project area or by market effects whereby emission reductions are countered by emissions created by shifts in supply of and demand for the products and services affected by the project.

Template Value is set to:

## Leakage responds to these Invocations

### Property Name: Additionality

Property Value Description: A score for the principle that a project activity is additional if the resulting emission reductions are lower than what would have happened in the absence of the activity.

Template Value is set to:

## Additionality responds to these Invocations

### Property Name: ReferenceToBenefitProjectClaim

Property Value Description: A compound reference to the full id path for the benefit claim data: projectId/modularBenefitProjectId/claimId.

Template Value is set to:

## ReferenceToBenefitProjectClaim responds to these Invocations

### Property Name: ReferenceToVerificationContractProcessedClaim

Property Value Description: A reference to the full id path for the verification contract/processedClaims/ProcessedClaimId.

Template Value is set to:

## ReferenceToVerificationContractProcessedClaim responds to these Invocations

## Properties

### Property Name: AssetId

Property Value Description: typically the issuing verifiers master id or serial number that resides on their registry system. Could be empty or the same as the token's id if not needed.

Template Value is set to:

## AssetId responds to these Invocations

### Property Name: IssuanceDate

Property Value Description: Refers to the date of issuance usually in the DD/MM/YYYY or MM/DD/YYYY.

Template Value is set to:

## IssuanceDate responds to these Invocations

### Property Name: GenerationType

Property Value Description: An ecological product can be a generated value based on verified historical results or ex-ante, meaning a predicted result. See the enum type in ecological-asset.proto for example.

Template Value is set to:

## GenerationType responds to these Invocations

### Property Name: VerificationStandard

Property Value Description: The verification standard used to determine and issue a ecological benefit token. These can be a voluntary or compliance/regulatory standard. See the ecological-asset.proto enum for an example.

Template Value is set to:

## VerificationStandard responds to these Invocations

### Property Name: Leakage

Property Value Description: A decrease in sequestration or an increase in emissions outside the boundaries of project, program activities resulting from project, and/or program implementation. Leakage may be caused by shifting of the activities of people present in the project area or by market effects whereby emission reductions are countered by emissions created by shifts in supply of and demand for the products and services affected by the project.

Template Value is set to:

## Leakage responds to these Invocations

### Property Name: Additionality

Property Value Description: A score for the principle that a project activity is additional if the resulting emission reductions are lower than what would have happened in the absence of the activity.

Template Value is set to:

## Additionality responds to these Invocations

### Property Name: ReferenceToBenefitProjectClaim

Property Value Description: A compound reference to the full id path for the benefit claim data: projectId/modularBenefitProjectId/claimId.

Template Value is set to:

## ReferenceToBenefitProjectClaim responds to these Invocations

### Property Name: ReferenceToVerificationContractProcessedClaim

Property Value Description: A reference to the full id path for the verification contract/processedClaims/ProcessedClaimId.

Template Value is set to:

## ReferenceToVerificationContractProcessedClaim responds to these Invocations

## Properties

### Property Name: AssetId

Property Value Description: typically the issuing verifiers master id or serial number that resides on their registry system. Could be empty or the same as the token's id if not needed.

Template Value is set to:

## AssetId responds to these Invocations

### Property Name: IssuanceDate

Property Value Description: Refers to the date of issuance usually in the DD/MM/YYYY or MM/DD/YYYY.

Template Value is set to:

## IssuanceDate responds to these Invocations

### Property Name: GenerationType

Property Value Description: An ecological product can be a generated value based on verified historical results or ex-ante, meaning a predicted result. See the enum type in ecological-asset.proto for example.

Template Value is set to:

## GenerationType responds to these Invocations

### Property Name: VerificationStandard

Property Value Description: The verification standard used to determine and issue a ecological benefit token. These can be a voluntary or compliance/regulatory standard. See the ecological-asset.proto enum for an example.

Template Value is set to:

## VerificationStandard responds to these Invocations

### Property Name: Leakage

Property Value Description: A decrease in sequestration or an increase in emissions outside the boundaries of project, program activities resulting from project, and/or program implementation. Leakage may be caused by shifting of the activities of people present in the project area or by market effects whereby emission reductions are countered by emissions created by shifts in supply of and demand for the products and services affected by the project.

Template Value is set to:

## Leakage responds to these Invocations

### Property Name: Additionality

Property Value Description: A score for the principle that a project activity is additional if the resulting emission reductions are lower than what would have happened in the absence of the activity.

Template Value is set to:

## Additionality responds to these Invocations

### Property Name: ReferenceToBenefitProjectClaim

Property Value Description: A compound reference to the full id path for the benefit claim data: projectId/modularBenefitProjectId/claimId.

Template Value is set to:

## ReferenceToBenefitProjectClaim responds to these Invocations

### Property Name: ReferenceToVerificationContractProcessedClaim

Property Value Description: A reference to the full id path for the verification contract/processedClaims/ProcessedClaimId.

Template Value is set to:

## ReferenceToVerificationContractProcessedClaim responds to these Invocations

## Properties

### Property Name: AssetId

Property Value Description: typically the issuing verifiers master id or serial number that resides on their registry system. Could be empty or the same as the token's id if not needed.

Template Value is set to:

## AssetId responds to these Invocations

### Property Name: IssuanceDate

Property Value Description: Refers to the date of issuance usually in the DD/MM/YYYY or MM/DD/YYYY.

Template Value is set to:

## IssuanceDate responds to these Invocations

### Property Name: GenerationType

Property Value Description: An ecological product can be a generated value based on verified historical results or ex-ante, meaning a predicted result. See the enum type in ecological-asset.proto for example.

Template Value is set to:

## GenerationType responds to these Invocations

### Property Name: VerificationStandard

Property Value Description: The verification standard used to determine and issue a ecological benefit token. These can be a voluntary or compliance/regulatory standard. See the ecological-asset.proto enum for an example.

Template Value is set to:

## VerificationStandard responds to these Invocations

### Property Name: Leakage

Property Value Description: A decrease in sequestration or an increase in emissions outside the boundaries of project, program activities resulting from project, and/or program implementation. Leakage may be caused by shifting of the activities of people present in the project area or by market effects whereby emission reductions are countered by emissions created by shifts in supply of and demand for the products and services affected by the project.

Template Value is set to:

## Leakage responds to these Invocations

### Property Name: Additionality

Property Value Description: A score for the principle that a project activity is additional if the resulting emission reductions are lower than what would have happened in the absence of the activity.

Template Value is set to:

## Additionality responds to these Invocations

### Property Name: ReferenceToBenefitProjectClaim

Property Value Description: A compound reference to the full id path for the benefit claim data: projectId/modularBenefitProjectId/claimId.

Template Value is set to:

## ReferenceToBenefitProjectClaim responds to these Invocations

### Property Name: ReferenceToVerificationContractProcessedClaim

Property Value Description: A reference to the full id path for the verification contract/processedClaims/ProcessedClaimId.

Template Value is set to:

## ReferenceToVerificationContractProcessedClaim responds to these Invocations

### Property Name: CoreCarbonPrinciples

Property Value Description: Contains the values for the CoreCarbonPrinciples.

Template Value is set to:

## CoreCarbonPrinciples responds to these Invocations

## Properties

### Property Name: AssetId

Property Value Description: typically the issuing verifiers master id or serial number that resides on their registry system. Could be empty or the same as the token's id if not needed.

Template Value is set to:

## AssetId responds to these Invocations

### Property Name: IssuanceDate

Property Value Description: Refers to the date of issuance usually in the DD/MM/YYYY or MM/DD/YYYY.

Template Value is set to:

## IssuanceDate responds to these Invocations

### Property Name: GenerationType

Property Value Description: An ecological product can be a generated value based on verified historical results or ex-ante, meaning a predicted result. See the enum type in ecological-asset.proto for example.

Template Value is set to:

## GenerationType responds to these Invocations

### Property Name: VerificationStandard

Property Value Description: The verification standard used to determine and issue a ecological benefit token. These can be a voluntary or compliance/regulatory standard. See the ecological-asset.proto enum for an example.

Template Value is set to:

## VerificationStandard responds to these Invocations

### Property Name: Leakage

Property Value Description: A decrease in sequestration or an increase in emissions outside the boundaries of project, program activities resulting from project, and/or program implementation. Leakage may be caused by shifting of the activities of people present in the project area or by market effects whereby emission reductions are countered by emissions created by shifts in supply of and demand for the products and services affected by the project.

Template Value is set to:

## Leakage responds to these Invocations

### Property Name: Additionality

Property Value Description: A score for the principle that a project activity is additional if the resulting emission reductions are lower than what would have happened in the absence of the activity.

Template Value is set to:

## Additionality responds to these Invocations

### Property Name: ReferenceToBenefitProjectClaim

Property Value Description: A compound reference to the full id path for the benefit claim data: projectId/modularBenefitProjectId/claimId.

Template Value is set to:

## ReferenceToBenefitProjectClaim responds to these Invocations

### Property Name: ReferenceToVerificationContractProcessedClaim

Property Value Description: A reference to the full id path for the verification contract/processedClaims/ProcessedClaimId.

Template Value is set to:

## ReferenceToVerificationContractProcessedClaim responds to these Invocations

## Properties

### Property Name: AssetId

Property Value Description: typically the issuing verifiers master id or serial number that resides on their registry system. Could be empty or the same as the token's id if not needed.

Template Value is set to:

## AssetId responds to these Invocations

### Property Name: IssuanceDate

Property Value Description: Refers to the date of issuance usually in the DD/MM/YYYY or MM/DD/YYYY.

Template Value is set to:

## IssuanceDate responds to these Invocations

### Property Name: GenerationType

Property Value Description: An ecological product can be a generated value based on verified historical results or ex-ante, meaning a predicted result. See the enum type in ecological-asset.proto for example.

Template Value is set to:

## GenerationType responds to these Invocations

### Property Name: VerificationStandard

Property Value Description: The verification standard used to determine and issue a ecological benefit token. These can be a voluntary or compliance/regulatory standard. See the ecological-asset.proto enum for an example.

Template Value is set to:

## VerificationStandard responds to these Invocations

### Property Name: Leakage

Property Value Description: A decrease in sequestration or an increase in emissions outside the boundaries of project, program activities resulting from project, and/or program implementation. Leakage may be caused by shifting of the activities of people present in the project area or by market effects whereby emission reductions are countered by emissions created by shifts in supply of and demand for the products and services affected by the project.

Template Value is set to:

## Leakage responds to these Invocations

### Property Name: Additionality

Property Value Description: A score for the principle that a project activity is additional if the resulting emission reductions are lower than what would have happened in the absence of the activity.

Template Value is set to:

## Additionality responds to these Invocations

### Property Name: ReferenceToBenefitProjectClaim

Property Value Description: A compound reference to the full id path for the benefit claim data: projectId/modularBenefitProjectId/claimId.

Template Value is set to:

## ReferenceToBenefitProjectClaim responds to these Invocations

### Property Name: ReferenceToVerificationContractProcessedClaim

Property Value Description: A reference to the full id path for the verification contract/processedClaims/ProcessedClaimId.

Template Value is set to:

## ReferenceToVerificationContractProcessedClaim responds to these Invocations

## Properties

### Property Name: AssetId

Property Value Description: typically the issuing verifiers master id or serial number that resides on their registry system. Could be empty or the same as the token's id if not needed.

Template Value is set to:

## AssetId responds to these Invocations

### Property Name: IssuanceDate

Property Value Description: Refers to the date of issuance usually in the DD/MM/YYYY or MM/DD/YYYY.

Template Value is set to:

## IssuanceDate responds to these Invocations

### Property Name: GenerationType

Property Value Description: An ecological product can be a generated value based on verified historical results or ex-ante, meaning a predicted result. See the enum type in ecological-asset.proto for example.

Template Value is set to:

## GenerationType responds to these Invocations

### Property Name: VerificationStandard

Property Value Description: The verification standard used to determine and issue a ecological benefit token. These can be a voluntary or compliance/regulatory standard. See the ecological-asset.proto enum for an example.

Template Value is set to:

## VerificationStandard responds to these Invocations

### Property Name: Leakage

Property Value Description: A decrease in sequestration or an increase in emissions outside the boundaries of project, program activities resulting from project, and/or program implementation. Leakage may be caused by shifting of the activities of people present in the project area or by market effects whereby emission reductions are countered by emissions created by shifts in supply of and demand for the products and services affected by the project.

Template Value is set to:

## Leakage responds to these Invocations

### Property Name: Additionality

Property Value Description: A score for the principle that a project activity is additional if the resulting emission reductions are lower than what would have happened in the absence of the activity.

Template Value is set to:

## Additionality responds to these Invocations

### Property Name: ReferenceToBenefitProjectClaim

Property Value Description: A compound reference to the full id path for the benefit claim data: projectId/modularBenefitProjectId/claimId.

Template Value is set to:

## ReferenceToBenefitProjectClaim responds to these Invocations

### Property Name: ReferenceToVerificationContractProcessedClaim

Property Value Description: A reference to the full id path for the verification contract/processedClaims/ProcessedClaimId.

Template Value is set to:

## ReferenceToVerificationContractProcessedClaim responds to these Invocations

## Properties

### Property Name: AssetId

Property Value Description: typically the issuing verifiers master id or serial number that resides on their registry system. Could be empty or the same as the token's id if not needed.

Template Value is set to:

## AssetId responds to these Invocations

### Property Name: IssuanceDate

Property Value Description: Refers to the date of issuance usually in the DD/MM/YYYY or MM/DD/YYYY.

Template Value is set to:

## IssuanceDate responds to these Invocations

### Property Name: GenerationType

Property Value Description: An ecological product can be a generated value based on verified historical results or ex-ante, meaning a predicted result. See the enum type in ecological-asset.proto for example.

Template Value is set to:

## GenerationType responds to these Invocations

### Property Name: VerificationStandard

Property Value Description: The verification standard used to determine and issue a ecological benefit token. These can be a voluntary or compliance/regulatory standard. See the ecological-asset.proto enum for an example.

Template Value is set to:

## VerificationStandard responds to these Invocations

### Property Name: Leakage

Property Value Description: A decrease in sequestration or an increase in emissions outside the boundaries of project, program activities resulting from project, and/or program implementation. Leakage may be caused by shifting of the activities of people present in the project area or by market effects whereby emission reductions are countered by emissions created by shifts in supply of and demand for the products and services affected by the project.

Template Value is set to:

## Leakage responds to these Invocations

### Property Name: Additionality

Property Value Description: A score for the principle that a project activity is additional if the resulting emission reductions are lower than what would have happened in the absence of the activity.

Template Value is set to:

## Additionality responds to these Invocations

### Property Name: ReferenceToBenefitProjectClaim

Property Value Description: A compound reference to the full id path for the benefit claim data: projectId/modularBenefitProjectId/claimId.

Template Value is set to:

## ReferenceToBenefitProjectClaim responds to these Invocations

### Property Name: ReferenceToVerificationContractProcessedClaim

Property Value Description: A reference to the full id path for the verification contract/processedClaims/ProcessedClaimId.

Template Value is set to:

## ReferenceToVerificationContractProcessedClaim responds to these Invocations

## Properties

### Property Name: AssetId

Property Value Description: typically the issuing verifiers master id or serial number that resides on their registry system. Could be empty or the same as the token's id if not needed.

Template Value is set to:

## AssetId responds to these Invocations

### Property Name: IssuanceDate

Property Value Description: Refers to the date of issuance usually in the DD/MM/YYYY or MM/DD/YYYY.

Template Value is set to:

## IssuanceDate responds to these Invocations

### Property Name: GenerationType

Property Value Description: An ecological product can be a generated value based on verified historical results or ex-ante, meaning a predicted result. See the enum type in ecological-asset.proto for example.

Template Value is set to:

## GenerationType responds to these Invocations

### Property Name: VerificationStandard

Property Value Description: The verification standard used to determine and issue a ecological benefit token. These can be a voluntary or compliance/regulatory standard. See the ecological-asset.proto enum for an example.

Template Value is set to:

## VerificationStandard responds to these Invocations

### Property Name: Leakage

Property Value Description: A decrease in sequestration or an increase in emissions outside the boundaries of project, program activities resulting from project, and/or program implementation. Leakage may be caused by shifting of the activities of people present in the project area or by market effects whereby emission reductions are countered by emissions created by shifts in supply of and demand for the products and services affected by the project.

Template Value is set to:

## Leakage responds to these Invocations

### Property Name: Additionality

Property Value Description: A score for the principle that a project activity is additional if the resulting emission reductions are lower than what would have happened in the absence of the activity.

Template Value is set to:

## Additionality responds to these Invocations

### Property Name: ReferenceToBenefitProjectClaim

Property Value Description: A compound reference to the full id path for the benefit claim data: projectId/modularBenefitProjectId/claimId.

Template Value is set to:

## ReferenceToBenefitProjectClaim responds to these Invocations

### Property Name: ReferenceToVerificationContractProcessedClaim

Property Value Description: A reference to the full id path for the verification contract/processedClaims/ProcessedClaimId.

Template Value is set to:

## ReferenceToVerificationContractProcessedClaim responds to these Invocations

## Properties

### Property Name: AssetId

Property Value Description: typically the issuing verifiers master id or serial number that resides on their registry system. Could be empty or the same as the token's id if not needed.

Template Value is set to:

## AssetId responds to these Invocations

### Property Name: IssuanceDate

Property Value Description: Refers to the date of issuance usually in the DD/MM/YYYY or MM/DD/YYYY.

Template Value is set to:

## IssuanceDate responds to these Invocations

### Property Name: GenerationType

Property Value Description: An ecological product can be a generated value based on verified historical results or ex-ante, meaning a predicted result. See the enum type in ecological-asset.proto for example.

Template Value is set to:

## GenerationType responds to these Invocations

### Property Name: VerificationStandard

Property Value Description: The verification standard used to determine and issue a ecological benefit token. These can be a voluntary or compliance/regulatory standard. See the ecological-asset.proto enum for an example.

Template Value is set to:

## VerificationStandard responds to these Invocations

### Property Name: Leakage

Property Value Description: A decrease in sequestration or an increase in emissions outside the boundaries of project, program activities resulting from project, and/or program implementation. Leakage may be caused by shifting of the activities of people present in the project area or by market effects whereby emission reductions are countered by emissions created by shifts in supply of and demand for the products and services affected by the project.

Template Value is set to:

## Leakage responds to these Invocations

### Property Name: Additionality

Property Value Description: A score for the principle that a project activity is additional if the resulting emission reductions are lower than what would have happened in the absence of the activity.

Template Value is set to:

## Additionality responds to these Invocations

### Property Name: ReferenceToBenefitProjectClaim

Property Value Description: A compound reference to the full id path for the benefit claim data: projectId/modularBenefitProjectId/claimId.

Template Value is set to:

## ReferenceToBenefitProjectClaim responds to these Invocations

### Property Name: ReferenceToVerificationContractProcessedClaim

Property Value Description: A reference to the full id path for the verification contract/processedClaims/ProcessedClaimId.

Template Value is set to:

## ReferenceToVerificationContractProcessedClaim responds to these Invocations

## Properties

### Property Name: AssetId

Property Value Description: typically the issuing verifiers master id or serial number that resides on their registry system. Could be empty or the same as the token's id if not needed.

Template Value is set to:

## AssetId responds to these Invocations

### Property Name: IssuanceDate

Property Value Description: Refers to the date of issuance usually in the DD/MM/YYYY or MM/DD/YYYY.

Template Value is set to:

## IssuanceDate responds to these Invocations

### Property Name: GenerationType

Property Value Description: An ecological product can be a generated value based on verified historical results or ex-ante, meaning a predicted result. See the enum type in ecological-asset.proto for example.

Template Value is set to:

## GenerationType responds to these Invocations

### Property Name: VerificationStandard

Property Value Description: The verification standard used to determine and issue a ecological benefit token. These can be a voluntary or compliance/regulatory standard. See the ecological-asset.proto enum for an example.

Template Value is set to:

## VerificationStandard responds to these Invocations

### Property Name: Leakage

Property Value Description: A decrease in sequestration or an increase in emissions outside the boundaries of project, program activities resulting from project, and/or program implementation. Leakage may be caused by shifting of the activities of people present in the project area or by market effects whereby emission reductions are countered by emissions created by shifts in supply of and demand for the products and services affected by the project.

Template Value is set to:

## Leakage responds to these Invocations

### Property Name: Additionality

Property Value Description: A score for the principle that a project activity is additional if the resulting emission reductions are lower than what would have happened in the absence of the activity.

Template Value is set to:

## Additionality responds to these Invocations

### Property Name: ReferenceToBenefitProjectClaim

Property Value Description: A compound reference to the full id path for the benefit claim data: projectId/modularBenefitProjectId/claimId.

Template Value is set to:

## ReferenceToBenefitProjectClaim responds to these Invocations

### Property Name: ReferenceToVerificationContractProcessedClaim

Property Value Description: A reference to the full id path for the verification contract/processedClaims/ProcessedClaimId.

Template Value is set to:

## ReferenceToVerificationContractProcessedClaim responds to these Invocations

## Properties

### Property Name: AssetId

Property Value Description: typically the issuing verifiers master id or serial number that resides on their registry system. Could be empty or the same as the token's id if not needed.

Template Value is set to:

## AssetId responds to these Invocations

### Property Name: IssuanceDate

Property Value Description: Refers to the date of issuance usually in the DD/MM/YYYY or MM/DD/YYYY.

Template Value is set to:

## IssuanceDate responds to these Invocations

### Property Name: GenerationType

Property Value Description: An ecological product can be a generated value based on verified historical results or ex-ante, meaning a predicted result. See the enum type in ecological-asset.proto for example.

Template Value is set to:

## GenerationType responds to these Invocations

### Property Name: VerificationStandard

Property Value Description: The verification standard used to determine and issue a ecological benefit token. These can be a voluntary or compliance/regulatory standard. See the ecological-asset.proto enum for an example.

Template Value is set to:

## VerificationStandard responds to these Invocations

### Property Name: Leakage

Property Value Description: A decrease in sequestration or an increase in emissions outside the boundaries of project, program activities resulting from project, and/or program implementation. Leakage may be caused by shifting of the activities of people present in the project area or by market effects whereby emission reductions are countered by emissions created by shifts in supply of and demand for the products and services affected by the project.

Template Value is set to:

## Leakage responds to these Invocations

### Property Name: Additionality

Property Value Description: A score for the principle that a project activity is additional if the resulting emission reductions are lower than what would have happened in the absence of the activity.

Template Value is set to:

## Additionality responds to these Invocations

### Property Name: ReferenceToBenefitProjectClaim

Property Value Description: A compound reference to the full id path for the benefit claim data: projectId/modularBenefitProjectId/claimId.

Template Value is set to:

## ReferenceToBenefitProjectClaim responds to these Invocations

### Property Name: ReferenceToVerificationContractProcessedClaim

Property Value Description: A reference to the full id path for the verification contract/processedClaims/ProcessedClaimId.

Template Value is set to:

## ReferenceToVerificationContractProcessedClaim responds to these Invocations

## Properties

### Property Name: CoreCarbonPrinciples

Property Value Description: Contains the values for the CoreCarbonPrinciples.

Template Value is set to:

## CoreCarbonPrinciples responds to these Invocations

## Properties

### Property Name: AssetId

Property Value Description: typically the issuing verifiers master id or serial number that resides on their registry system. Could be empty or the same as the token's id if not needed.

Template Value is set to:

## AssetId responds to these Invocations

### Property Name: IssuanceDate

Property Value Description: Refers to the date of issuance usually in the DD/MM/YYYY or MM/DD/YYYY.

Template Value is set to:

## IssuanceDate responds to these Invocations

### Property Name: GenerationType

Property Value Description: An ecological product can be a generated value based on verified historical results or ex-ante, meaning a predicted result. See the enum type in ecological-asset.proto for example.

Template Value is set to:

## GenerationType responds to these Invocations

### Property Name: VerificationStandard

Property Value Description: The verification standard used to determine and issue a ecological benefit token. These can be a voluntary or compliance/regulatory standard. See the ecological-asset.proto enum for an example.

Template Value is set to:

## VerificationStandard responds to these Invocations

### Property Name: Leakage

Property Value Description: A decrease in sequestration or an increase in emissions outside the boundaries of project, program activities resulting from project, and/or program implementation. Leakage may be caused by shifting of the activities of people present in the project area or by market effects whereby emission reductions are countered by emissions created by shifts in supply of and demand for the products and services affected by the project.

Template Value is set to:

## Leakage responds to these Invocations

### Property Name: Additionality

Property Value Description: A score for the principle that a project activity is additional if the resulting emission reductions are lower than what would have happened in the absence of the activity.

Template Value is set to:

## Additionality responds to these Invocations

### Property Name: ReferenceToBenefitProjectClaim

Property Value Description: A compound reference to the full id path for the benefit claim data: projectId/modularBenefitProjectId/claimId.

Template Value is set to:

## ReferenceToBenefitProjectClaim responds to these Invocations

### Property Name: ReferenceToVerificationContractProcessedClaim

Property Value Description: A reference to the full id path for the verification contract/processedClaims/ProcessedClaimId.

Template Value is set to:

## ReferenceToVerificationContractProcessedClaim responds to these Invocations

## Properties

### Property Name: AssetId

Property Value Description: typically the issuing verifiers master id or serial number that resides on their registry system. Could be empty or the same as the token's id if not needed.

Template Value is set to:

## AssetId responds to these Invocations

### Property Name: IssuanceDate

Property Value Description: Refers to the date of issuance usually in the DD/MM/YYYY or MM/DD/YYYY.

Template Value is set to:

## IssuanceDate responds to these Invocations

### Property Name: GenerationType

Property Value Description: An ecological product can be a generated value based on verified historical results or ex-ante, meaning a predicted result. See the enum type in ecological-asset.proto for example.

Template Value is set to:

## GenerationType responds to these Invocations

### Property Name: VerificationStandard

Property Value Description: The verification standard used to determine and issue a ecological benefit token. These can be a voluntary or compliance/regulatory standard. See the ecological-asset.proto enum for an example.

Template Value is set to:

## VerificationStandard responds to these Invocations

### Property Name: Leakage

Property Value Description: A decrease in sequestration or an increase in emissions outside the boundaries of project, program activities resulting from project, and/or program implementation. Leakage may be caused by shifting of the activities of people present in the project area or by market effects whereby emission reductions are countered by emissions created by shifts in supply of and demand for the products and services affected by the project.

Template Value is set to:

## Leakage responds to these Invocations

### Property Name: Additionality

Property Value Description: A score for the principle that a project activity is additional if the resulting emission reductions are lower than what would have happened in the absence of the activity.

Template Value is set to:

## Additionality responds to these Invocations

### Property Name: ReferenceToBenefitProjectClaim

Property Value Description: A compound reference to the full id path for the benefit claim data: projectId/modularBenefitProjectId/claimId.

Template Value is set to:

## ReferenceToBenefitProjectClaim responds to these Invocations

### Property Name: ReferenceToVerificationContractProcessedClaim

Property Value Description: A reference to the full id path for the verification contract/processedClaims/ProcessedClaimId.

Template Value is set to:

## ReferenceToVerificationContractProcessedClaim responds to these Invocations

## Properties

### Property Name: AssetId

Property Value Description: typically the issuing verifiers master id or serial number that resides on their registry system. Could be empty or the same as the token's id if not needed.

Template Value is set to:

## AssetId responds to these Invocations

### Property Name: IssuanceDate

Property Value Description: Refers to the date of issuance usually in the DD/MM/YYYY or MM/DD/YYYY.

Template Value is set to:

## IssuanceDate responds to these Invocations

### Property Name: GenerationType

Property Value Description: An ecological product can be a generated value based on verified historical results or ex-ante, meaning a predicted result. See the enum type in ecological-asset.proto for example.

Template Value is set to:

## GenerationType responds to these Invocations

### Property Name: VerificationStandard

Property Value Description: The verification standard used to determine and issue a ecological benefit token. These can be a voluntary or compliance/regulatory standard. See the ecological-asset.proto enum for an example.

Template Value is set to:

## VerificationStandard responds to these Invocations

### Property Name: Leakage

Property Value Description: A decrease in sequestration or an increase in emissions outside the boundaries of project, program activities resulting from project, and/or program implementation. Leakage may be caused by shifting of the activities of people present in the project area or by market effects whereby emission reductions are countered by emissions created by shifts in supply of and demand for the products and services affected by the project.

Template Value is set to:

## Leakage responds to these Invocations

### Property Name: Additionality

Property Value Description: A score for the principle that a project activity is additional if the resulting emission reductions are lower than what would have happened in the absence of the activity.

Template Value is set to:

## Additionality responds to these Invocations

### Property Name: ReferenceToBenefitProjectClaim

Property Value Description: A compound reference to the full id path for the benefit claim data: projectId/modularBenefitProjectId/claimId.

Template Value is set to:

## ReferenceToBenefitProjectClaim responds to these Invocations

### Property Name: ReferenceToVerificationContractProcessedClaim

Property Value Description: A reference to the full id path for the verification contract/processedClaims/ProcessedClaimId.

Template Value is set to:

## ReferenceToVerificationContractProcessedClaim responds to these Invocations

## Properties

### Property Name: AssetId

Property Value Description: typically the issuing verifiers master id or serial number that resides on their registry system. Could be empty or the same as the token's id if not needed.

Template Value is set to:

## AssetId responds to these Invocations

### Property Name: IssuanceDate

Property Value Description: Refers to the date of issuance usually in the DD/MM/YYYY or MM/DD/YYYY.

Template Value is set to:

## IssuanceDate responds to these Invocations

### Property Name: GenerationType

Property Value Description: An ecological product can be a generated value based on verified historical results or ex-ante, meaning a predicted result. See the enum type in ecological-asset.proto for example.

Template Value is set to:

## GenerationType responds to these Invocations

### Property Name: VerificationStandard

Property Value Description: The verification standard used to determine and issue a ecological benefit token. These can be a voluntary or compliance/regulatory standard. See the ecological-asset.proto enum for an example.

Template Value is set to:

## VerificationStandard responds to these Invocations

### Property Name: Leakage

Property Value Description: A decrease in sequestration or an increase in emissions outside the boundaries of project, program activities resulting from project, and/or program implementation. Leakage may be caused by shifting of the activities of people present in the project area or by market effects whereby emission reductions are countered by emissions created by shifts in supply of and demand for the products and services affected by the project.

Template Value is set to:

## Leakage responds to these Invocations

### Property Name: Additionality

Property Value Description: A score for the principle that a project activity is additional if the resulting emission reductions are lower than what would have happened in the absence of the activity.

Template Value is set to:

## Additionality responds to these Invocations

### Property Name: ReferenceToBenefitProjectClaim

Property Value Description: A compound reference to the full id path for the benefit claim data: projectId/modularBenefitProjectId/claimId.

Template Value is set to:

## ReferenceToBenefitProjectClaim responds to these Invocations

### Property Name: ReferenceToVerificationContractProcessedClaim

Property Value Description: A reference to the full id path for the verification contract/processedClaims/ProcessedClaimId.

Template Value is set to:

## ReferenceToVerificationContractProcessedClaim responds to these Invocations

## Properties

### Property Name: AssetId

Property Value Description: typically the issuing verifiers master id or serial number that resides on their registry system. Could be empty or the same as the token's id if not needed.

Template Value is set to:

## AssetId responds to these Invocations

### Property Name: IssuanceDate

Property Value Description: Refers to the date of issuance usually in the DD/MM/YYYY or MM/DD/YYYY.

Template Value is set to:

## IssuanceDate responds to these Invocations

### Property Name: GenerationType

Property Value Description: An ecological product can be a generated value based on verified historical results or ex-ante, meaning a predicted result. See the enum type in ecological-asset.proto for example.

Template Value is set to:

## GenerationType responds to these Invocations

### Property Name: VerificationStandard

Property Value Description: The verification standard used to determine and issue a ecological benefit token. These can be a voluntary or compliance/regulatory standard. See the ecological-asset.proto enum for an example.

Template Value is set to:

## VerificationStandard responds to these Invocations

### Property Name: Leakage

Property Value Description: A decrease in sequestration or an increase in emissions outside the boundaries of project, program activities resulting from project, and/or program implementation. Leakage may be caused by shifting of the activities of people present in the project area or by market effects whereby emission reductions are countered by emissions created by shifts in supply of and demand for the products and services affected by the project.

Template Value is set to:

## Leakage responds to these Invocations

### Property Name: Additionality

Property Value Description: A score for the principle that a project activity is additional if the resulting emission reductions are lower than what would have happened in the absence of the activity.

Template Value is set to:

## Additionality responds to these Invocations

### Property Name: ReferenceToBenefitProjectClaim

Property Value Description: A compound reference to the full id path for the benefit claim data: projectId/modularBenefitProjectId/claimId.

Template Value is set to:

## ReferenceToBenefitProjectClaim responds to these Invocations

### Property Name: ReferenceToVerificationContractProcessedClaim

Property Value Description: A reference to the full id path for the verification contract/processedClaims/ProcessedClaimId.

Template Value is set to:

## ReferenceToVerificationContractProcessedClaim responds to these Invocations

## Properties

### Property Name: AssetId

Property Value Description: typically the issuing verifiers master id or serial number that resides on their registry system. Could be empty or the same as the token's id if not needed.

Template Value is set to:

## AssetId responds to these Invocations

### Property Name: IssuanceDate

Property Value Description: Refers to the date of issuance usually in the DD/MM/YYYY or MM/DD/YYYY.

Template Value is set to:

## IssuanceDate responds to these Invocations

### Property Name: GenerationType

Property Value Description: An ecological product can be a generated value based on verified historical results or ex-ante, meaning a predicted result. See the enum type in ecological-asset.proto for example.

Template Value is set to:

## GenerationType responds to these Invocations

### Property Name: VerificationStandard

Property Value Description: The verification standard used to determine and issue a ecological benefit token. These can be a voluntary or compliance/regulatory standard. See the ecological-asset.proto enum for an example.

Template Value is set to:

## VerificationStandard responds to these Invocations

### Property Name: Leakage

Property Value Description: A decrease in sequestration or an increase in emissions outside the boundaries of project, program activities resulting from project, and/or program implementation. Leakage may be caused by shifting of the activities of people present in the project area or by market effects whereby emission reductions are countered by emissions created by shifts in supply of and demand for the products and services affected by the project.

Template Value is set to:

## Leakage responds to these Invocations

### Property Name: Additionality

Property Value Description: A score for the principle that a project activity is additional if the resulting emission reductions are lower than what would have happened in the absence of the activity.

Template Value is set to:

## Additionality responds to these Invocations

### Property Name: ReferenceToBenefitProjectClaim

Property Value Description: A compound reference to the full id path for the benefit claim data: projectId/modularBenefitProjectId/claimId.

Template Value is set to:

## ReferenceToBenefitProjectClaim responds to these Invocations

### Property Name: ReferenceToVerificationContractProcessedClaim

Property Value Description: A reference to the full id path for the verification contract/processedClaims/ProcessedClaimId.

Template Value is set to:

## ReferenceToVerificationContractProcessedClaim responds to these Invocations

## Properties

### Property Name: AssetId

Property Value Description: typically the issuing verifiers master id or serial number that resides on their registry system. Could be empty or the same as the token's id if not needed.

Template Value is set to:

## AssetId responds to these Invocations

### Property Name: IssuanceDate

Property Value Description: Refers to the date of issuance usually in the DD/MM/YYYY or MM/DD/YYYY.

Template Value is set to:

## IssuanceDate responds to these Invocations

### Property Name: GenerationType

Property Value Description: An ecological product can be a generated value based on verified historical results or ex-ante, meaning a predicted result. See the enum type in ecological-asset.proto for example.

Template Value is set to:

## GenerationType responds to these Invocations

### Property Name: VerificationStandard

Property Value Description: The verification standard used to determine and issue a ecological benefit token. These can be a voluntary or compliance/regulatory standard. See the ecological-asset.proto enum for an example.

Template Value is set to:

## VerificationStandard responds to these Invocations

### Property Name: Leakage

Property Value Description: A decrease in sequestration or an increase in emissions outside the boundaries of project, program activities resulting from project, and/or program implementation. Leakage may be caused by shifting of the activities of people present in the project area or by market effects whereby emission reductions are countered by emissions created by shifts in supply of and demand for the products and services affected by the project.

Template Value is set to:

## Leakage responds to these Invocations

### Property Name: Additionality

Property Value Description: A score for the principle that a project activity is additional if the resulting emission reductions are lower than what would have happened in the absence of the activity.

Template Value is set to:

## Additionality responds to these Invocations

### Property Name: ReferenceToBenefitProjectClaim

Property Value Description: A compound reference to the full id path for the benefit claim data: projectId/modularBenefitProjectId/claimId.

Template Value is set to:

## ReferenceToBenefitProjectClaim responds to these Invocations

### Property Name: ReferenceToVerificationContractProcessedClaim

Property Value Description: A reference to the full id path for the verification contract/processedClaims/ProcessedClaimId.

Template Value is set to:

## ReferenceToVerificationContractProcessedClaim responds to these Invocations

## Properties

### Property Name: AssetId

Property Value Description: typically the issuing verifiers master id or serial number that resides on their registry system. Could be empty or the same as the token's id if not needed.

Template Value is set to:

## AssetId responds to these Invocations

### Property Name: IssuanceDate

Property Value Description: Refers to the date of issuance usually in the DD/MM/YYYY or MM/DD/YYYY.

Template Value is set to:

## IssuanceDate responds to these Invocations

### Property Name: GenerationType

Property Value Description: An ecological product can be a generated value based on verified historical results or ex-ante, meaning a predicted result. See the enum type in ecological-asset.proto for example.

Template Value is set to:

## GenerationType responds to these Invocations

### Property Name: VerificationStandard

Property Value Description: The verification standard used to determine and issue a ecological benefit token. These can be a voluntary or compliance/regulatory standard. See the ecological-asset.proto enum for an example.

Template Value is set to:

## VerificationStandard responds to these Invocations

### Property Name: Leakage

Property Value Description: A decrease in sequestration or an increase in emissions outside the boundaries of project, program activities resulting from project, and/or program implementation. Leakage may be caused by shifting of the activities of people present in the project area or by market effects whereby emission reductions are countered by emissions created by shifts in supply of and demand for the products and services affected by the project.

Template Value is set to:

## Leakage responds to these Invocations

### Property Name: Additionality

Property Value Description: A score for the principle that a project activity is additional if the resulting emission reductions are lower than what would have happened in the absence of the activity.

Template Value is set to:

## Additionality responds to these Invocations

### Property Name: ReferenceToBenefitProjectClaim

Property Value Description: A compound reference to the full id path for the benefit claim data: projectId/modularBenefitProjectId/claimId.

Template Value is set to:

## ReferenceToBenefitProjectClaim responds to these Invocations

### Property Name: ReferenceToVerificationContractProcessedClaim

Property Value Description: A reference to the full id path for the verification contract/processedClaims/ProcessedClaimId.

Template Value is set to:

## ReferenceToVerificationContractProcessedClaim responds to these Invocations

### Property Name: CoreCarbonPrinciples

Property Value Description: Contains the values for the CoreCarbonPrinciples.

Template Value is set to:

## CoreCarbonPrinciples responds to these Invocations

## Properties

### Property Name: AssetId

Property Value Description: typically the issuing verifiers master id or serial number that resides on their registry system. Could be empty or the same as the token's id if not needed.

Template Value is set to:

## AssetId responds to these Invocations

### Property Name: IssuanceDate

Property Value Description: Refers to the date of issuance usually in the DD/MM/YYYY or MM/DD/YYYY.

Template Value is set to:

## IssuanceDate responds to these Invocations

### Property Name: GenerationType

Property Value Description: An ecological product can be a generated value based on verified historical results or ex-ante, meaning a predicted result. See the enum type in ecological-asset.proto for example.

Template Value is set to:

## GenerationType responds to these Invocations

### Property Name: VerificationStandard

Property Value Description: The verification standard used to determine and issue a ecological benefit token. These can be a voluntary or compliance/regulatory standard. See the ecological-asset.proto enum for an example.

Template Value is set to:

## VerificationStandard responds to these Invocations

### Property Name: Leakage

Property Value Description: A decrease in sequestration or an increase in emissions outside the boundaries of project, program activities resulting from project, and/or program implementation. Leakage may be caused by shifting of the activities of people present in the project area or by market effects whereby emission reductions are countered by emissions created by shifts in supply of and demand for the products and services affected by the project.

Template Value is set to:

## Leakage responds to these Invocations

### Property Name: Additionality

Property Value Description: A score for the principle that a project activity is additional if the resulting emission reductions are lower than what would have happened in the absence of the activity.

Template Value is set to:

## Additionality responds to these Invocations

### Property Name: ReferenceToBenefitProjectClaim

Property Value Description: A compound reference to the full id path for the benefit claim data: projectId/modularBenefitProjectId/claimId.

Template Value is set to:

## ReferenceToBenefitProjectClaim responds to these Invocations

### Property Name: ReferenceToVerificationContractProcessedClaim

Property Value Description: A reference to the full id path for the verification contract/processedClaims/ProcessedClaimId.

Template Value is set to:

## ReferenceToVerificationContractProcessedClaim responds to these Invocations

## Properties

### Property Name: AssetId

Property Value Description: typically the issuing verifiers master id or serial number that resides on their registry system. Could be empty or the same as the token's id if not needed.

Template Value is set to:

## AssetId responds to these Invocations

### Property Name: IssuanceDate

Property Value Description: Refers to the date of issuance usually in the DD/MM/YYYY or MM/DD/YYYY.

Template Value is set to:

## IssuanceDate responds to these Invocations

### Property Name: GenerationType

Property Value Description: An ecological product can be a generated value based on verified historical results or ex-ante, meaning a predicted result. See the enum type in ecological-asset.proto for example.

Template Value is set to:

## GenerationType responds to these Invocations

### Property Name: VerificationStandard

Property Value Description: The verification standard used to determine and issue a ecological benefit token. These can be a voluntary or compliance/regulatory standard. See the ecological-asset.proto enum for an example.

Template Value is set to:

## VerificationStandard responds to these Invocations

### Property Name: Leakage

Property Value Description: A decrease in sequestration or an increase in emissions outside the boundaries of project, program activities resulting from project, and/or program implementation. Leakage may be caused by shifting of the activities of people present in the project area or by market effects whereby emission reductions are countered by emissions created by shifts in supply of and demand for the products and services affected by the project.

Template Value is set to:

## Leakage responds to these Invocations

### Property Name: Additionality

Property Value Description: A score for the principle that a project activity is additional if the resulting emission reductions are lower than what would have happened in the absence of the activity.

Template Value is set to:

## Additionality responds to these Invocations

### Property Name: ReferenceToBenefitProjectClaim

Property Value Description: A compound reference to the full id path for the benefit claim data: projectId/modularBenefitProjectId/claimId.

Template Value is set to:

## ReferenceToBenefitProjectClaim responds to these Invocations

### Property Name: ReferenceToVerificationContractProcessedClaim

Property Value Description: A reference to the full id path for the verification contract/processedClaims/ProcessedClaimId.

Template Value is set to:

## ReferenceToVerificationContractProcessedClaim responds to these Invocations

## Properties

### Property Name: AssetId

Property Value Description: typically the issuing verifiers master id or serial number that resides on their registry system. Could be empty or the same as the token's id if not needed.

Template Value is set to:

## AssetId responds to these Invocations

### Property Name: IssuanceDate

Property Value Description: Refers to the date of issuance usually in the DD/MM/YYYY or MM/DD/YYYY.

Template Value is set to:

## IssuanceDate responds to these Invocations

### Property Name: GenerationType

Property Value Description: An ecological product can be a generated value based on verified historical results or ex-ante, meaning a predicted result. See the enum type in ecological-asset.proto for example.

Template Value is set to:

## GenerationType responds to these Invocations

### Property Name: VerificationStandard

Property Value Description: The verification standard used to determine and issue a ecological benefit token. These can be a voluntary or compliance/regulatory standard. See the ecological-asset.proto enum for an example.

Template Value is set to:

## VerificationStandard responds to these Invocations

### Property Name: Leakage

Property Value Description: A decrease in sequestration or an increase in emissions outside the boundaries of project, program activities resulting from project, and/or program implementation. Leakage may be caused by shifting of the activities of people present in the project area or by market effects whereby emission reductions are countered by emissions created by shifts in supply of and demand for the products and services affected by the project.

Template Value is set to:

## Leakage responds to these Invocations

### Property Name: Additionality

Property Value Description: A score for the principle that a project activity is additional if the resulting emission reductions are lower than what would have happened in the absence of the activity.

Template Value is set to:

## Additionality responds to these Invocations

### Property Name: ReferenceToBenefitProjectClaim

Property Value Description: A compound reference to the full id path for the benefit claim data: projectId/modularBenefitProjectId/claimId.

Template Value is set to:

## ReferenceToBenefitProjectClaim responds to these Invocations

### Property Name: ReferenceToVerificationContractProcessedClaim

Property Value Description: A reference to the full id path for the verification contract/processedClaims/ProcessedClaimId.

Template Value is set to:

## ReferenceToVerificationContractProcessedClaim responds to these Invocations

## Properties

### Property Name: AssetId

Property Value Description: typically the issuing verifiers master id or serial number that resides on their registry system. Could be empty or the same as the token's id if not needed.

Template Value is set to:

## AssetId responds to these Invocations

### Property Name: IssuanceDate

Property Value Description: Refers to the date of issuance usually in the DD/MM/YYYY or MM/DD/YYYY.

Template Value is set to:

## IssuanceDate responds to these Invocations

### Property Name: GenerationType

Property Value Description: An ecological product can be a generated value based on verified historical results or ex-ante, meaning a predicted result. See the enum type in ecological-asset.proto for example.

Template Value is set to:

## GenerationType responds to these Invocations

### Property Name: VerificationStandard

Property Value Description: The verification standard used to determine and issue a ecological benefit token. These can be a voluntary or compliance/regulatory standard. See the ecological-asset.proto enum for an example.

Template Value is set to:

## VerificationStandard responds to these Invocations

### Property Name: Leakage

Property Value Description: A decrease in sequestration or an increase in emissions outside the boundaries of project, program activities resulting from project, and/or program implementation. Leakage may be caused by shifting of the activities of people present in the project area or by market effects whereby emission reductions are countered by emissions created by shifts in supply of and demand for the products and services affected by the project.

Template Value is set to:

## Leakage responds to these Invocations

### Property Name: Additionality

Property Value Description: A score for the principle that a project activity is additional if the resulting emission reductions are lower than what would have happened in the absence of the activity.

Template Value is set to:

## Additionality responds to these Invocations

### Property Name: ReferenceToBenefitProjectClaim

Property Value Description: A compound reference to the full id path for the benefit claim data: projectId/modularBenefitProjectId/claimId.

Template Value is set to:

## ReferenceToBenefitProjectClaim responds to these Invocations

### Property Name: ReferenceToVerificationContractProcessedClaim

Property Value Description: A reference to the full id path for the verification contract/processedClaims/ProcessedClaimId.

Template Value is set to:

## ReferenceToVerificationContractProcessedClaim responds to these Invocations

## Properties

### Property Name: AssetId

Property Value Description: typically the issuing verifiers master id or serial number that resides on their registry system. Could be empty or the same as the token's id if not needed.

Template Value is set to:

## AssetId responds to these Invocations

### Property Name: IssuanceDate

Property Value Description: Refers to the date of issuance usually in the DD/MM/YYYY or MM/DD/YYYY.

Template Value is set to:

## IssuanceDate responds to these Invocations

### Property Name: GenerationType

Property Value Description: An ecological product can be a generated value based on verified historical results or ex-ante, meaning a predicted result. See the enum type in ecological-asset.proto for example.

Template Value is set to:

## GenerationType responds to these Invocations

### Property Name: VerificationStandard

Property Value Description: The verification standard used to determine and issue a ecological benefit token. These can be a voluntary or compliance/regulatory standard. See the ecological-asset.proto enum for an example.

Template Value is set to:

## VerificationStandard responds to these Invocations

### Property Name: Leakage

Property Value Description: A decrease in sequestration or an increase in emissions outside the boundaries of project, program activities resulting from project, and/or program implementation. Leakage may be caused by shifting of the activities of people present in the project area or by market effects whereby emission reductions are countered by emissions created by shifts in supply of and demand for the products and services affected by the project.

Template Value is set to:

## Leakage responds to these Invocations

### Property Name: Additionality

Property Value Description: A score for the principle that a project activity is additional if the resulting emission reductions are lower than what would have happened in the absence of the activity.

Template Value is set to:

## Additionality responds to these Invocations

### Property Name: ReferenceToBenefitProjectClaim

Property Value Description: A compound reference to the full id path for the benefit claim data: projectId/modularBenefitProjectId/claimId.

Template Value is set to:

## ReferenceToBenefitProjectClaim responds to these Invocations

### Property Name: ReferenceToVerificationContractProcessedClaim

Property Value Description: A reference to the full id path for the verification contract/processedClaims/ProcessedClaimId.

Template Value is set to:

## ReferenceToVerificationContractProcessedClaim responds to these Invocations

## Properties

### Property Name: AssetId

Property Value Description: typically the issuing verifiers master id or serial number that resides on their registry system. Could be empty or the same as the token's id if not needed.

Template Value is set to:

## AssetId responds to these Invocations

### Property Name: IssuanceDate

Property Value Description: Refers to the date of issuance usually in the DD/MM/YYYY or MM/DD/YYYY.

Template Value is set to:

## IssuanceDate responds to these Invocations

### Property Name: GenerationType

Property Value Description: An ecological product can be a generated value based on verified historical results or ex-ante, meaning a predicted result. See the enum type in ecological-asset.proto for example.

Template Value is set to:

## GenerationType responds to these Invocations

### Property Name: VerificationStandard

Property Value Description: The verification standard used to determine and issue a ecological benefit token. These can be a voluntary or compliance/regulatory standard. See the ecological-asset.proto enum for an example.

Template Value is set to:

## VerificationStandard responds to these Invocations

### Property Name: Leakage

Property Value Description: A decrease in sequestration or an increase in emissions outside the boundaries of project, program activities resulting from project, and/or program implementation. Leakage may be caused by shifting of the activities of people present in the project area or by market effects whereby emission reductions are countered by emissions created by shifts in supply of and demand for the products and services affected by the project.

Template Value is set to:

## Leakage responds to these Invocations

### Property Name: Additionality

Property Value Description: A score for the principle that a project activity is additional if the resulting emission reductions are lower than what would have happened in the absence of the activity.

Template Value is set to:

## Additionality responds to these Invocations

### Property Name: ReferenceToBenefitProjectClaim

Property Value Description: A compound reference to the full id path for the benefit claim data: projectId/modularBenefitProjectId/claimId.

Template Value is set to:

## ReferenceToBenefitProjectClaim responds to these Invocations

### Property Name: ReferenceToVerificationContractProcessedClaim

Property Value Description: A reference to the full id path for the verification contract/processedClaims/ProcessedClaimId.

Template Value is set to:

## ReferenceToVerificationContractProcessedClaim responds to these Invocations

## Properties

### Property Name: AssetId

Property Value Description: typically the issuing verifiers master id or serial number that resides on their registry system. Could be empty or the same as the token's id if not needed.

Template Value is set to:

## AssetId responds to these Invocations

### Property Name: IssuanceDate

Property Value Description: Refers to the date of issuance usually in the DD/MM/YYYY or MM/DD/YYYY.

Template Value is set to:

## IssuanceDate responds to these Invocations

### Property Name: GenerationType

Property Value Description: An ecological product can be a generated value based on verified historical results or ex-ante, meaning a predicted result. See the enum type in ecological-asset.proto for example.

Template Value is set to:

## GenerationType responds to these Invocations

### Property Name: VerificationStandard

Property Value Description: The verification standard used to determine and issue a ecological benefit token. These can be a voluntary or compliance/regulatory standard. See the ecological-asset.proto enum for an example.

Template Value is set to:

## VerificationStandard responds to these Invocations

### Property Name: Leakage

Property Value Description: A decrease in sequestration or an increase in emissions outside the boundaries of project, program activities resulting from project, and/or program implementation. Leakage may be caused by shifting of the activities of people present in the project area or by market effects whereby emission reductions are countered by emissions created by shifts in supply of and demand for the products and services affected by the project.

Template Value is set to:

## Leakage responds to these Invocations

### Property Name: Additionality

Property Value Description: A score for the principle that a project activity is additional if the resulting emission reductions are lower than what would have happened in the absence of the activity.

Template Value is set to:

## Additionality responds to these Invocations

### Property Name: ReferenceToBenefitProjectClaim

Property Value Description: A compound reference to the full id path for the benefit claim data: projectId/modularBenefitProjectId/claimId.

Template Value is set to:

## ReferenceToBenefitProjectClaim responds to these Invocations

### Property Name: ReferenceToVerificationContractProcessedClaim

Property Value Description: A reference to the full id path for the verification contract/processedClaims/ProcessedClaimId.

Template Value is set to:

## ReferenceToVerificationContractProcessedClaim responds to these Invocations

## Properties

### Property Name: AssetId

Property Value Description: typically the issuing verifiers master id or serial number that resides on their registry system. Could be empty or the same as the token's id if not needed.

Template Value is set to:

## AssetId responds to these Invocations

### Property Name: IssuanceDate

Property Value Description: Refers to the date of issuance usually in the DD/MM/YYYY or MM/DD/YYYY.

Template Value is set to:

## IssuanceDate responds to these Invocations

### Property Name: GenerationType

Property Value Description: An ecological product can be a generated value based on verified historical results or ex-ante, meaning a predicted result. See the enum type in ecological-asset.proto for example.

Template Value is set to:

## GenerationType responds to these Invocations

### Property Name: VerificationStandard

Property Value Description: The verification standard used to determine and issue a ecological benefit token. These can be a voluntary or compliance/regulatory standard. See the ecological-asset.proto enum for an example.

Template Value is set to:

## VerificationStandard responds to these Invocations

### Property Name: Leakage

Property Value Description: A decrease in sequestration or an increase in emissions outside the boundaries of project, program activities resulting from project, and/or program implementation. Leakage may be caused by shifting of the activities of people present in the project area or by market effects whereby emission reductions are countered by emissions created by shifts in supply of and demand for the products and services affected by the project.

Template Value is set to:

## Leakage responds to these Invocations

### Property Name: Additionality

Property Value Description: A score for the principle that a project activity is additional if the resulting emission reductions are lower than what would have happened in the absence of the activity.

Template Value is set to:

## Additionality responds to these Invocations

### Property Name: ReferenceToBenefitProjectClaim

Property Value Description: A compound reference to the full id path for the benefit claim data: projectId/modularBenefitProjectId/claimId.

Template Value is set to:

## ReferenceToBenefitProjectClaim responds to these Invocations

### Property Name: ReferenceToVerificationContractProcessedClaim

Property Value Description: A reference to the full id path for the verification contract/processedClaims/ProcessedClaimId.

Template Value is set to:

## ReferenceToVerificationContractProcessedClaim responds to these Invocations

### Specification (Sub) Property Set

## Date Range

|  |  |
| --- | --- |
| Type: | PropertySet |
| Name: | Date Range |
| Id: | d7607f63-5e29-424f-a991-3f05c8f0daf7 |
| Visual: | &phi;<i>DR</i> |
| Tooling: | phDR |
| Version: | 1.0 |

## Definition

A token class that implements this property set will have a time period defined using a start and stop date and time. The Date Range includes a simple date and a granular timestamp for both the start and stop points defining the time period.

## Example

A token may represent value of a byproduct our output of some activity that occurred during a certain time period. In the case of ecological tokens, it can be the time period in which some benefit is measured and verified that would represent the benefit's value.

## Analogies

|  |  |
| --- | --- |
| Name | Description |
| GHG/Carbon Benefit | A token implementing this property set can represent the avoidance or removal or GHG/Carbon for a certain time period. |

## Dependencies

|  |  |  |
| --- | --- | --- |
| Artifact Type | Symbol | Description |

## Incompatible With

|  |  |  |
| --- | --- | --- |
| Artifact Type | Symbol | Id |

## Influenced By

|  |  |  |
| --- | --- | --- |
| Description | Symbol | Applies To |
| Roles should be used to control what accounts can set the Date Range. | r | [ ] |

## Artifact Files

|  |  |  |
| --- | --- | --- |
| Content Type | File Name | File Content |
| Control | date-range.proto |  |
| Uml | date-range.md |  |

## Code Map

|  |  |  |  |
| --- | --- | --- | --- |
| Map Type | Name | Platform | Location |

## Implementation Map

|  |  |  |  |
| --- | --- | --- | --- |
| Map Type | Name | Platform | Location |

## Resource Map

|  |  |  |  |
| --- | --- | --- | --- |
| Map Type | Name | Location | Description |

|  |  |
| --- | --- |
| Property Set Representation Type | Description |
| Common | This property set's value is common or shared for all token instances in the class. Meaning all tokens in the class will share the same value of the property set. |

## Properties

### Property Name: DateRange

Property Value Description: Contains the date range.

Template Value is set to:

## DateRange responds to these Invocations

## Specification Property Set

## Core Carbon Attributes

|  |  |
| --- | --- |
| Type: | PropertySet |
| Name: | Core Carbon Attributes |
| Id: | 7c116214-ba38-4f85-99b2-0a9017f8a33f |
| Visual: | &phi;<i>CCA</i> |
| Tooling: | phCCA |
| Version: | 1.0 |

## Definition

This property set includes the information about a removal of net atmospheric carbon dioxide emissions on a lifecycle basis with conservative assumptions regarding uncertainty.

## Example

A GHG/Carbon removal or sequestration activity can differ between ecological projects as to certain net-negativity attributes: Additionality - The principle that a project activity is additional if the resulting emission reductions are lower than what would have happened in the absence of the activity; Durability - The term in years of how long the CO2 will be removed from the atmosphere, compared with the risk of CO2 reversion to the atmosphere before that term elapses; Leakage - A decrease in sequestration or an increase in emissions outside the boundaries of project, program activities resulting from project, and/or program implementation. Leakage may be caused by shifting of the activities of people present in the project area or by market effects whereby emission reductions are countered by emissions created by shifts in supply of and demand for the products and services affected by the project; Clear Removals - Are either clearly 100% removals (afforestation-reforestation) or are ex-post verified as removal volumes according to a published MRV methodology.

## Analogies

|  |  |
| --- | --- |
| Name | Description |

## Dependencies

|  |  |  |
| --- | --- | --- |
| Artifact Type | Symbol | Description |
| PropertySet | phCB | The Co-benefit property set is included in this property set. |

## Incompatible With

|  |  |  |
| --- | --- | --- |
| Artifact Type | Symbol | Id |

## Influenced By

|  |  |  |
| --- | --- | --- |
| Description | Symbol | Applies To |
| Roles should be used to control what accounts can update or modify scores. | r | [ ] |

## Artifact Files

|  |  |  |
| --- | --- | --- |
| Content Type | File Name | File Content |
| Control | core-carbon-attributes.proto |  |
| Uml | core-carbon-attributes.md |  |

## Code Map

|  |  |  |  |
| --- | --- | --- | --- |
| Map Type | Name | Platform | Location |

## Implementation Map

|  |  |  |  |
| --- | --- | --- | --- |
| Map Type | Name | Platform | Location |

## Resource Map

|  |  |  |  |
| --- | --- | --- | --- |
| Map Type | Name | Location | Description |

|  |  |
| --- | --- |
| Property Set Representation Type | Description |
| Common | This property set's value is common or shared for all token instances in the class. Meaning all tokens in the class will share the same value of the property set. |

## Properties

### Property Name: NetNegativityScores

Property Value Description: Contains the values for the Net Negativity Scores.

Template Value is set to:

## NetNegativityScores responds to these Invocations

## Properties

### Property Name: NetNegativityScores

Property Value Description: Contains the values for the Net Negativity Scores.

Template Value is set to:

## NetNegativityScores responds to these Invocations

## Properties

### Property Name: Vintage

Property Value Description: Refers to the year that the emissions reduction or ecological benefit took place. Usually in a YYYY format.

Template Value is set to:

## Vintage responds to these Invocations

### Property Name: Durability

Property Value Description: The term in years of how long the CO2 will be removed from the atmosphere, compared with the risk of CO2 reversion to the atmosphere before that term elapses.

Template Value is set to:

## Durability responds to these Invocations

### Property Name: Storage

Property Value Description: Are either Biological or Geological storage of sequestered carbon.

Template Value is set to:

## Storage responds to these Invocations

### Property Name: ClearRemovals

Property Value Description: Are either clearly 100% removals (afforestation-reforestation) or are ex-post verified as removal volumes according to a published MRV methodology and did NOT increase N20 and/or CH4.

Template Value is set to:

## ClearRemovals responds to these Invocations

## Properties

### Property Name: Vintage

Property Value Description: Refers to the year that the emissions reduction or ecological benefit took place. Usually in a YYYY format.

Template Value is set to:

## Vintage responds to these Invocations

### Property Name: Durability

Property Value Description: The term in years of how long the CO2 will be removed from the atmosphere, compared with the risk of CO2 reversion to the atmosphere before that term elapses.

Template Value is set to:

## Durability responds to these Invocations

### Property Name: Storage

Property Value Description: Are either Biological or Geological storage of sequestered carbon.

Template Value is set to:

## Storage responds to these Invocations

### Property Name: ClearRemovals

Property Value Description: Are either clearly 100% removals (afforestation-reforestation) or are ex-post verified as removal volumes according to a published MRV methodology and did NOT increase N20 and/or CH4.

Template Value is set to:

## ClearRemovals responds to these Invocations

## Properties

### Property Name: Vintage

Property Value Description: Refers to the year that the emissions reduction or ecological benefit took place. Usually in a YYYY format.

Template Value is set to:

## Vintage responds to these Invocations

### Property Name: Durability

Property Value Description: The term in years of how long the CO2 will be removed from the atmosphere, compared with the risk of CO2 reversion to the atmosphere before that term elapses.

Template Value is set to:

## Durability responds to these Invocations

### Property Name: Storage

Property Value Description: Are either Biological or Geological storage of sequestered carbon.

Template Value is set to:

## Storage responds to these Invocations

### Property Name: ClearRemovals

Property Value Description: Are either clearly 100% removals (afforestation-reforestation) or are ex-post verified as removal volumes according to a published MRV methodology and did NOT increase N20 and/or CH4.

Template Value is set to:

## ClearRemovals responds to these Invocations

## Properties

### Property Name: Vintage

Property Value Description: Refers to the year that the emissions reduction or ecological benefit took place. Usually in a YYYY format.

Template Value is set to:

## Vintage responds to these Invocations

### Property Name: Durability

Property Value Description: The term in years of how long the CO2 will be removed from the atmosphere, compared with the risk of CO2 reversion to the atmosphere before that term elapses.

Template Value is set to:

## Durability responds to these Invocations

### Property Name: Storage

Property Value Description: Are either Biological or Geological storage of sequestered carbon.

Template Value is set to:

## Storage responds to these Invocations

### Property Name: ClearRemovals

Property Value Description: Are either clearly 100% removals (afforestation-reforestation) or are ex-post verified as removal volumes according to a published MRV methodology and did NOT increase N20 and/or CH4.

Template Value is set to:

## ClearRemovals responds to these Invocations

### Property Name: NetNegativityScores

Property Value Description: Contains the values for the Net Negativity Scores.

Template Value is set to:

## NetNegativityScores responds to these Invocations

## Properties

### Property Name: Vintage

Property Value Description: Refers to the year that the emissions reduction or ecological benefit took place. Usually in a YYYY format.

Template Value is set to:

## Vintage responds to these Invocations

### Property Name: Durability

Property Value Description: The term in years of how long the CO2 will be removed from the atmosphere, compared with the risk of CO2 reversion to the atmosphere before that term elapses.

Template Value is set to:

## Durability responds to these Invocations

### Property Name: Storage

Property Value Description: Are either Biological or Geological storage of sequestered carbon.

Template Value is set to:

## Storage responds to these Invocations

### Property Name: ClearRemovals

Property Value Description: Are either clearly 100% removals (afforestation-reforestation) or are ex-post verified as removal volumes according to a published MRV methodology and did NOT increase N20 and/or CH4.

Template Value is set to:

## ClearRemovals responds to these Invocations

## Properties

### Property Name: Vintage

Property Value Description: Refers to the year that the emissions reduction or ecological benefit took place. Usually in a YYYY format.

Template Value is set to:

## Vintage responds to these Invocations

### Property Name: Durability

Property Value Description: The term in years of how long the CO2 will be removed from the atmosphere, compared with the risk of CO2 reversion to the atmosphere before that term elapses.

Template Value is set to:

## Durability responds to these Invocations

### Property Name: Storage

Property Value Description: Are either Biological or Geological storage of sequestered carbon.

Template Value is set to:

## Storage responds to these Invocations

### Property Name: ClearRemovals

Property Value Description: Are either clearly 100% removals (afforestation-reforestation) or are ex-post verified as removal volumes according to a published MRV methodology and did NOT increase N20 and/or CH4.

Template Value is set to:

## ClearRemovals responds to these Invocations

## Properties

### Property Name: Vintage

Property Value Description: Refers to the year that the emissions reduction or ecological benefit took place. Usually in a YYYY format.

Template Value is set to:

## Vintage responds to these Invocations

### Property Name: Durability

Property Value Description: The term in years of how long the CO2 will be removed from the atmosphere, compared with the risk of CO2 reversion to the atmosphere before that term elapses.

Template Value is set to:

## Durability responds to these Invocations

### Property Name: Storage

Property Value Description: Are either Biological or Geological storage of sequestered carbon.

Template Value is set to:

## Storage responds to these Invocations

### Property Name: ClearRemovals

Property Value Description: Are either clearly 100% removals (afforestation-reforestation) or are ex-post verified as removal volumes according to a published MRV methodology and did NOT increase N20 and/or CH4.

Template Value is set to:

## ClearRemovals responds to these Invocations

## Properties

### Property Name: Vintage

Property Value Description: Refers to the year that the emissions reduction or ecological benefit took place. Usually in a YYYY format.

Template Value is set to:

## Vintage responds to these Invocations

### Property Name: Durability

Property Value Description: The term in years of how long the CO2 will be removed from the atmosphere, compared with the risk of CO2 reversion to the atmosphere before that term elapses.

Template Value is set to:

## Durability responds to these Invocations

### Property Name: Storage

Property Value Description: Are either Biological or Geological storage of sequestered carbon.

Template Value is set to:

## Storage responds to these Invocations

### Property Name: ClearRemovals

Property Value Description: Are either clearly 100% removals (afforestation-reforestation) or are ex-post verified as removal volumes according to a published MRV methodology and did NOT increase N20 and/or CH4.

Template Value is set to:

## ClearRemovals responds to these Invocations

## Properties

### Property Name: NetNegativityScores

Property Value Description: Contains the values for the Net Negativity Scores.

Template Value is set to:

## NetNegativityScores responds to these Invocations

## Properties

### Property Name: Vintage

Property Value Description: Refers to the year that the emissions reduction or ecological benefit took place. Usually in a YYYY format.

Template Value is set to:

## Vintage responds to these Invocations

### Property Name: Durability

Property Value Description: The term in years of how long the CO2 will be removed from the atmosphere, compared with the risk of CO2 reversion to the atmosphere before that term elapses.

Template Value is set to:

## Durability responds to these Invocations

### Property Name: Storage

Property Value Description: Are either Biological or Geological storage of sequestered carbon.

Template Value is set to:

## Storage responds to these Invocations

### Property Name: ClearRemovals

Property Value Description: Are either clearly 100% removals (afforestation-reforestation) or are ex-post verified as removal volumes according to a published MRV methodology and did NOT increase N20 and/or CH4.

Template Value is set to:

## ClearRemovals responds to these Invocations

## Properties

### Property Name: Vintage

Property Value Description: Refers to the year that the emissions reduction or ecological benefit took place. Usually in a YYYY format.

Template Value is set to:

## Vintage responds to these Invocations

### Property Name: Durability

Property Value Description: The term in years of how long the CO2 will be removed from the atmosphere, compared with the risk of CO2 reversion to the atmosphere before that term elapses.

Template Value is set to:

## Durability responds to these Invocations

### Property Name: Storage

Property Value Description: Are either Biological or Geological storage of sequestered carbon.

Template Value is set to:

## Storage responds to these Invocations

### Property Name: ClearRemovals

Property Value Description: Are either clearly 100% removals (afforestation-reforestation) or are ex-post verified as removal volumes according to a published MRV methodology and did NOT increase N20 and/or CH4.

Template Value is set to:

## ClearRemovals responds to these Invocations

## Properties

### Property Name: Vintage

Property Value Description: Refers to the year that the emissions reduction or ecological benefit took place. Usually in a YYYY format.

Template Value is set to:

## Vintage responds to these Invocations

### Property Name: Durability

Property Value Description: The term in years of how long the CO2 will be removed from the atmosphere, compared with the risk of CO2 reversion to the atmosphere before that term elapses.

Template Value is set to:

## Durability responds to these Invocations

### Property Name: Storage

Property Value Description: Are either Biological or Geological storage of sequestered carbon.

Template Value is set to:

## Storage responds to these Invocations

### Property Name: ClearRemovals

Property Value Description: Are either clearly 100% removals (afforestation-reforestation) or are ex-post verified as removal volumes according to a published MRV methodology and did NOT increase N20 and/or CH4.

Template Value is set to:

## ClearRemovals responds to these Invocations

## Properties

### Property Name: Vintage

Property Value Description: Refers to the year that the emissions reduction or ecological benefit took place. Usually in a YYYY format.

Template Value is set to:

## Vintage responds to these Invocations

### Property Name: Durability

Property Value Description: The term in years of how long the CO2 will be removed from the atmosphere, compared with the risk of CO2 reversion to the atmosphere before that term elapses.

Template Value is set to:

## Durability responds to these Invocations

### Property Name: Storage

Property Value Description: Are either Biological or Geological storage of sequestered carbon.

Template Value is set to:

## Storage responds to these Invocations

### Property Name: ClearRemovals

Property Value Description: Are either clearly 100% removals (afforestation-reforestation) or are ex-post verified as removal volumes according to a published MRV methodology and did NOT increase N20 and/or CH4.

Template Value is set to:

## ClearRemovals responds to these Invocations

### Property Name: NetNegativityScores

Property Value Description: Contains the values for the Net Negativity Scores.

Template Value is set to:

## NetNegativityScores responds to these Invocations

## Properties

### Property Name: Vintage

Property Value Description: Refers to the year that the emissions reduction or ecological benefit took place. Usually in a YYYY format.

Template Value is set to:

## Vintage responds to these Invocations

### Property Name: Durability

Property Value Description: The term in years of how long the CO2 will be removed from the atmosphere, compared with the risk of CO2 reversion to the atmosphere before that term elapses.

Template Value is set to:

## Durability responds to these Invocations

### Property Name: Storage

Property Value Description: Are either Biological or Geological storage of sequestered carbon.

Template Value is set to:

## Storage responds to these Invocations

### Property Name: ClearRemovals

Property Value Description: Are either clearly 100% removals (afforestation-reforestation) or are ex-post verified as removal volumes according to a published MRV methodology and did NOT increase N20 and/or CH4.

Template Value is set to:

## ClearRemovals responds to these Invocations

## Properties

### Property Name: Vintage

Property Value Description: Refers to the year that the emissions reduction or ecological benefit took place. Usually in a YYYY format.

Template Value is set to:

## Vintage responds to these Invocations

### Property Name: Durability

Property Value Description: The term in years of how long the CO2 will be removed from the atmosphere, compared with the risk of CO2 reversion to the atmosphere before that term elapses.

Template Value is set to:

## Durability responds to these Invocations

### Property Name: Storage

Property Value Description: Are either Biological or Geological storage of sequestered carbon.

Template Value is set to:

## Storage responds to these Invocations

### Property Name: ClearRemovals

Property Value Description: Are either clearly 100% removals (afforestation-reforestation) or are ex-post verified as removal volumes according to a published MRV methodology and did NOT increase N20 and/or CH4.

Template Value is set to:

## ClearRemovals responds to these Invocations

## Properties

### Property Name: Vintage

Property Value Description: Refers to the year that the emissions reduction or ecological benefit took place. Usually in a YYYY format.

Template Value is set to:

## Vintage responds to these Invocations

### Property Name: Durability

Property Value Description: The term in years of how long the CO2 will be removed from the atmosphere, compared with the risk of CO2 reversion to the atmosphere before that term elapses.

Template Value is set to:

## Durability responds to these Invocations

### Property Name: Storage

Property Value Description: Are either Biological or Geological storage of sequestered carbon.

Template Value is set to:

## Storage responds to these Invocations

### Property Name: ClearRemovals

Property Value Description: Are either clearly 100% removals (afforestation-reforestation) or are ex-post verified as removal volumes according to a published MRV methodology and did NOT increase N20 and/or CH4.

Template Value is set to:

## ClearRemovals responds to these Invocations

## Properties

### Property Name: Vintage

Property Value Description: Refers to the year that the emissions reduction or ecological benefit took place. Usually in a YYYY format.

Template Value is set to:

## Vintage responds to these Invocations

### Property Name: Durability

Property Value Description: The term in years of how long the CO2 will be removed from the atmosphere, compared with the risk of CO2 reversion to the atmosphere before that term elapses.

Template Value is set to:

## Durability responds to these Invocations

### Property Name: Storage

Property Value Description: Are either Biological or Geological storage of sequestered carbon.

Template Value is set to:

## Storage responds to these Invocations

### Property Name: ClearRemovals

Property Value Description: Are either clearly 100% removals (afforestation-reforestation) or are ex-post verified as removal volumes according to a published MRV methodology and did NOT increase N20 and/or CH4.

Template Value is set to:

## ClearRemovals responds to these Invocations

### Specification (Sub) Property Set

## Core Carbon Classification

|  |  |
| --- | --- |
| Type: | PropertySet |
| Name: | Core Carbon Classification |
| Id: | a60326d6-399b-4128-bd99-9279283b0380 |
| Visual: | &phi;<i>CCACS</i> |
| Tooling: | phCCACS |
| Version: | 1.0 |

## Definition

A token class that implements this property set will have a Core Carbon Classification of either a category or either a Reduction or a Removal and a method of either Natural or Technology. For example if the classification is for a Carbon Dioxide Removal using agricultural practices, it would be categorized as a Removal using Natural methods.

## Example

When creating a Core Carbon Principle token, one of the attributes will be the classification to allow buyers to differentiate between CCP tokens as well as reference contracts to bundle similar assets together into a single product.

## Analogies

|  |  |
| --- | --- |
| Name | Description |

## Dependencies

|  |  |  |
| --- | --- | --- |
| Artifact Type | Symbol | Description |

## Incompatible With

|  |  |  |
| --- | --- | --- |
| Artifact Type | Symbol | Id |

## Influenced By

|  |  |  |
| --- | --- | --- |
| Description | Symbol | Applies To |
| Roles should be used to control what accounts can set the Classification Property. | r | [ ] |

## Artifact Files

|  |  |  |
| --- | --- | --- |
| Content Type | File Name | File Content |
| Control | cca-classification.proto |  |
| Uml | cca-classification.md |  |

## Code Map

|  |  |  |  |
| --- | --- | --- | --- |
| Map Type | Name | Platform | Location |

## Implementation Map

|  |  |  |  |
| --- | --- | --- | --- |
| Map Type | Name | Platform | Location |

## Resource Map

|  |  |  |  |
| --- | --- | --- | --- |
| Map Type | Name | Location | Description |

|  |  |
| --- | --- |
| Property Set Representation Type | Description |
| Common | This property set's value is common or shared for all token instances in the class. Meaning all tokens in the class will share the same value of the property set. |

## Properties

### Property Name: Classification

Property Value Description: Contains the values for the CCA classification as outlined in the cca-classification.proto.

Template Value is set to:

## Classification responds to these Invocations

## Properties

### Property Name: Classification

Property Value Description: Contains the SetClassification property values.

Template Value is set to:

## Classification responds to these Invocations

## Properties

### Property Name: Category

Property Value Description: Reduction or Removal

Template Value is set to:

## Category responds to these Invocations

### Property Name: Method

Property Value Description: Natural or Technology

Template Value is set to:

## Method responds to these Invocations

## Properties

### Property Name: Category

Property Value Description: Reduction or Removal

Template Value is set to:

## Category responds to these Invocations

### Property Name: Method

Property Value Description: Natural or Technology

Template Value is set to:

## Method responds to these Invocations

### Property Name: Classification

Property Value Description: Contains the SetClassification property values.

Template Value is set to:

## Classification responds to these Invocations

## Properties

### Property Name: Category

Property Value Description: Reduction or Removal

Template Value is set to:

## Category responds to these Invocations

### Property Name: Method

Property Value Description: Natural or Technology

Template Value is set to:

## Method responds to these Invocations

## Properties

### Property Name: Category

Property Value Description: Reduction or Removal

Template Value is set to:

## Category responds to these Invocations

### Property Name: Method

Property Value Description: Natural or Technology

Template Value is set to:

## Method responds to these Invocations

## Properties

### Property Name: Classification

Property Value Description: Contains the SetClassification property values.

Template Value is set to:

## Classification responds to these Invocations

## Properties

### Property Name: Category

Property Value Description: Reduction or Removal

Template Value is set to:

## Category responds to these Invocations

### Property Name: Method

Property Value Description: Natural or Technology

Template Value is set to:

## Method responds to these Invocations

## Properties

### Property Name: Category

Property Value Description: Reduction or Removal

Template Value is set to:

## Category responds to these Invocations

### Property Name: Method

Property Value Description: Natural or Technology

Template Value is set to:

## Method responds to these Invocations

### Property Name: Classification

Property Value Description: Contains the SetClassification property values.

Template Value is set to:

## Classification responds to these Invocations

## Properties

### Property Name: Category

Property Value Description: Reduction or Removal

Template Value is set to:

## Category responds to these Invocations

### Property Name: Method

Property Value Description: Natural or Technology

Template Value is set to:

## Method responds to these Invocations

## Properties

### Property Name: Category

Property Value Description: Reduction or Removal

Template Value is set to:

## Category responds to these Invocations

### Property Name: Method

Property Value Description: Natural or Technology

Template Value is set to:

## Method responds to these Invocations

### Specification (Sub) Property Set

## Replacement

|  |  |
| --- | --- |
| Type: | PropertySet |
| Name: | Replacement |
| Id: | 41df6a71-d7d4-441c-93e9-856307606750 |
| Visual: | &phi;<i>RPLC</i> |
| Tooling: | phRPLC |
| Version: | 1.0 |

## Definition

This property set is used to indicate that this token replaces a retired ecological benefit credit to support adjustments after issuance. For example, a benefit token make be issued in a quantity of 3 and at a future date it is determined for some reason to have actually been a value of 2. To support making this adjustment, the initial benefit token of 3 should be revoked/retired and a new or existing token can be issued or used and indicated as a replacement by setting the replacement values in this property set. This property records the Id of the token being replaced, the date of replacement and a free text field to record the reason for replacement.

## Example

For example, a measurement of CO2e removal through forestation can be issued with an amount, but need to be adjusted after a forest fire destroys a percentage of the forest requiring a decrease in the removal amount. The issuer of the initial token can retire, the climate accounting will need to adjust the effective emissions accordingly.

## Analogies

|  |  |
| --- | --- |
| Name | Description |

## Dependencies

|  |  |  |
| --- | --- | --- |
| Artifact Type | Symbol | Description |
| Behavior | v | Requires revokable to support replacement process. |

## Incompatible With

|  |  |  |
| --- | --- | --- |
| Artifact Type | Symbol | Id |

## Influenced By

|  |  |  |
| --- | --- | --- |
| Description | Symbol | Applies To |
| The token should have an issuer role where only the issuer is able to set the replacement values. | r | [ ] |

## Artifact Files

|  |  |  |
| --- | --- | --- |
| Content Type | File Name | File Content |
| Control | replacement.proto |  |
| Uml | replacement.md |  |

## Code Map

|  |  |  |  |
| --- | --- | --- | --- |
| Map Type | Name | Platform | Location |

## Implementation Map

|  |  |  |  |
| --- | --- | --- | --- |
| Map Type | Name | Platform | Location |

## Resource Map

|  |  |  |  |
| --- | --- | --- | --- |
| Map Type | Name | Location | Description |

|  |  |
| --- | --- |
| Property Set Representation Type | Description |
| Common | This property set's value is common or shared for all token instances in the class. Meaning all tokens in the class will share the same value of the property set. |

## Properties

### Property Name: Replacement

Property Value Description: Contains the Id, Date and notes about the replacement.

Template Value is set to:

## Replacement responds to these Invocations

## Properties

### Property Name: Adjustment

Property Value Description: Contains the adjustment from the issuer.

Template Value is set to:

## Adjustment responds to these Invocations

## Properties

### Property Name: ReplacesId

Property Value Description: Contains the id of the token it is replacing.

Template Value is set to:

## ReplacesId responds to these Invocations

### Property Name: ReplacementDate

Property Value Description: Contains the date the adjustment or replacement made by issuer.

Template Value is set to:

## ReplacementDate responds to these Invocations

### Property Name: ReplacementNotes

Property Value Description: Contains notes on why the replacement or adjustment is needed.

Template Value is set to:

## ReplacementNotes responds to these Invocations

## Properties

### Property Name: ReplacesId

Property Value Description: Contains the id of the token it is replacing.

Template Value is set to:

## ReplacesId responds to these Invocations

### Property Name: ReplacementDate

Property Value Description: Contains the date the adjustment or replacement made by issuer.

Template Value is set to:

## ReplacementDate responds to these Invocations

### Property Name: ReplacementNotes

Property Value Description: Contains notes on why the replacement or adjustment is needed.

Template Value is set to:

## ReplacementNotes responds to these Invocations

## Properties

### Property Name: ReplacesId

Property Value Description: Contains the id of the token it is replacing.

Template Value is set to:

## ReplacesId responds to these Invocations

### Property Name: ReplacementDate

Property Value Description: Contains the date the adjustment or replacement made by issuer.

Template Value is set to:

## ReplacementDate responds to these Invocations

### Property Name: ReplacementNotes

Property Value Description: Contains notes on why the replacement or adjustment is needed.

Template Value is set to:

## ReplacementNotes responds to these Invocations

### Property Name: Adjustment

Property Value Description: Contains the adjustment from the issuer.

Template Value is set to:

## Adjustment responds to these Invocations

## Properties

### Property Name: ReplacesId

Property Value Description: Contains the id of the token it is replacing.

Template Value is set to:

## ReplacesId responds to these Invocations

### Property Name: ReplacementDate

Property Value Description: Contains the date the adjustment or replacement made by issuer.

Template Value is set to:

## ReplacementDate responds to these Invocations

### Property Name: ReplacementNotes

Property Value Description: Contains notes on why the replacement or adjustment is needed.

Template Value is set to:

## ReplacementNotes responds to these Invocations

## Properties

### Property Name: ReplacesId

Property Value Description: Contains the id of the token it is replacing.

Template Value is set to:

## ReplacesId responds to these Invocations

### Property Name: ReplacementDate

Property Value Description: Contains the date the adjustment or replacement made by issuer.

Template Value is set to:

## ReplacementDate responds to these Invocations

### Property Name: ReplacementNotes

Property Value Description: Contains notes on why the replacement or adjustment is needed.

Template Value is set to:

## ReplacementNotes responds to these Invocations

## Properties

### Property Name: ReplacesId

Property Value Description: Contains the id of the token it is replacing.

Template Value is set to:

## ReplacesId responds to these Invocations

### Property Name: ReplacementDate

Property Value Description: Contains the date the adjustment or replacement made by issuer.

Template Value is set to:

## ReplacementDate responds to these Invocations

### Property Name: ReplacementNotes

Property Value Description: Contains notes on why the replacement or adjustment is needed.

Template Value is set to:

## ReplacementNotes responds to these Invocations

## Properties

### Property Name: Adjustment

Property Value Description: Contains the adjustment from the issuer.

Template Value is set to:

## Adjustment responds to these Invocations

## Properties

### Property Name: ReplacesId

Property Value Description: Contains the id of the token it is replacing.

Template Value is set to:

## ReplacesId responds to these Invocations

### Property Name: ReplacementDate

Property Value Description: Contains the date the adjustment or replacement made by issuer.

Template Value is set to:

## ReplacementDate responds to these Invocations

### Property Name: ReplacementNotes

Property Value Description: Contains notes on why the replacement or adjustment is needed.

Template Value is set to:

## ReplacementNotes responds to these Invocations

## Properties

### Property Name: ReplacesId

Property Value Description: Contains the id of the token it is replacing.

Template Value is set to:

## ReplacesId responds to these Invocations

### Property Name: ReplacementDate

Property Value Description: Contains the date the adjustment or replacement made by issuer.

Template Value is set to:

## ReplacementDate responds to these Invocations

### Property Name: ReplacementNotes

Property Value Description: Contains notes on why the replacement or adjustment is needed.

Template Value is set to:

## ReplacementNotes responds to these Invocations

## Properties

### Property Name: ReplacesId

Property Value Description: Contains the id of the token it is replacing.

Template Value is set to:

## ReplacesId responds to these Invocations

### Property Name: ReplacementDate

Property Value Description: Contains the date the adjustment or replacement made by issuer.

Template Value is set to:

## ReplacementDate responds to these Invocations

### Property Name: ReplacementNotes

Property Value Description: Contains notes on why the replacement or adjustment is needed.

Template Value is set to:

## ReplacementNotes responds to these Invocations

### Property Name: Adjustment

Property Value Description: Contains the adjustment from the issuer.

Template Value is set to:

## Adjustment responds to these Invocations

## Properties

### Property Name: ReplacesId

Property Value Description: Contains the id of the token it is replacing.

Template Value is set to:

## ReplacesId responds to these Invocations

### Property Name: ReplacementDate

Property Value Description: Contains the date the adjustment or replacement made by issuer.

Template Value is set to:

## ReplacementDate responds to these Invocations

### Property Name: ReplacementNotes

Property Value Description: Contains notes on why the replacement or adjustment is needed.

Template Value is set to:

## ReplacementNotes responds to these Invocations

## Properties

### Property Name: ReplacesId

Property Value Description: Contains the id of the token it is replacing.

Template Value is set to:

## ReplacesId responds to these Invocations

### Property Name: ReplacementDate

Property Value Description: Contains the date the adjustment or replacement made by issuer.

Template Value is set to:

## ReplacementDate responds to these Invocations

### Property Name: ReplacementNotes

Property Value Description: Contains notes on why the replacement or adjustment is needed.

Template Value is set to:

## ReplacementNotes responds to these Invocations

## Properties

### Property Name: ReplacesId

Property Value Description: Contains the id of the token it is replacing.

Template Value is set to:

## ReplacesId responds to these Invocations

### Property Name: ReplacementDate

Property Value Description: Contains the date the adjustment or replacement made by issuer.

Template Value is set to:

## ReplacementDate responds to these Invocations

### Property Name: ReplacementNotes

Property Value Description: Contains notes on why the replacement or adjustment is needed.

Template Value is set to:

## ReplacementNotes responds to these Invocations

### Specification (Sub) Property Set

## Co-benefit

|  |  |
| --- | --- |
| Type: | PropertySet |
| Name: | Co-benefit |
| Id: | 5a8c69f6-f3c5-4bc8-82d0-d3fbf90b59c7 |
| Visual: | &phi;<i>CB</i> |
| Tooling: | phCB |
| Version: | 1.0 |

## Definition

This property set includes the information about a ecological project's co-benefit claims, Some projects can achieve significant sustainable development outcomes for project participants in addition to the emission reductions. There are examples of projects where it can be argued that the sustainability co-benefits equal or exceed the impact of the emission reduction activity.

## Example

Reliable electricity supplies can enable new economic activities to develop (i.e. tourism, village industries), provide greater access to educational resources and improve village life.

## Analogies

|  |  |
| --- | --- |
| Name | Description |

## Dependencies

|  |  |  |
| --- | --- | --- |
| Artifact Type | Symbol | Description |

## Incompatible With

|  |  |  |
| --- | --- | --- |
| Artifact Type | Symbol | Id |

## Influenced By

|  |  |  |
| --- | --- | --- |
| Description | Symbol | Applies To |
| Roles should be used to control what accounts can create set a CoBenefit. | r | [ ] |

## Artifact Files

|  |  |  |
| --- | --- | --- |
| Content Type | File Name | File Content |
| Control | co-benefit.proto |  |
| Uml | co-benefit.md |  |

## Code Map

|  |  |  |  |
| --- | --- | --- | --- |
| Map Type | Name | Platform | Location |

## Implementation Map

|  |  |  |  |
| --- | --- | --- | --- |
| Map Type | Name | Platform | Location |

## Resource Map

|  |  |  |  |
| --- | --- | --- | --- |
| Map Type | Name | Location | Description |

|  |  |
| --- | --- |
| Property Set Representation Type | Description |
| Common | This property set's value is common or shared for all token instances in the class. Meaning all tokens in the class will share the same value of the property set. |

## Properties

### Property Name: CoBenefits

Property Value Description: Contains a list or collection of Co-benefit.

Template Value is set to:

## CoBenefits responds to these Invocations

## Properties

### Property Name: CoBenefit

Property Value Description: Contains the values for the CoBenefit.

Template Value is set to:

## CoBenefit responds to these Invocations

## Properties

### Property Name: BenefitCategory

Property Value Description: A selection from a list of categories, ex. see the co-benefit.proto enumeration of BenefitCategories.

Template Value is set to:

## BenefitCategory responds to these Invocations

### Property Name: Description

Property Value Description: A description of the co-benefit that is not captured via the category.

Template Value is set to:

## Description responds to these Invocations

### Property Name: RatingScore

Property Value Description: A placeholder for some kind of rating or scoring of the relative co-benefit.

Template Value is set to:

## RatingScore responds to these Invocations

## Properties

### Property Name: BenefitCategory

Property Value Description: A selection from a list of categories, ex. see the co-benefit.proto enumeration of BenefitCategories.

Template Value is set to:

## BenefitCategory responds to these Invocations

### Property Name: Description

Property Value Description: A description of the co-benefit that is not captured via the category.

Template Value is set to:

## Description responds to these Invocations

### Property Name: RatingScore

Property Value Description: A placeholder for some kind of rating or scoring of the relative co-benefit.

Template Value is set to:

## RatingScore responds to these Invocations

## Properties

### Property Name: BenefitCategory

Property Value Description: A selection from a list of categories, ex. see the co-benefit.proto enumeration of BenefitCategories.

Template Value is set to:

## BenefitCategory responds to these Invocations

### Property Name: Description

Property Value Description: A description of the co-benefit that is not captured via the category.

Template Value is set to:

## Description responds to these Invocations

### Property Name: RatingScore

Property Value Description: A placeholder for some kind of rating or scoring of the relative co-benefit.

Template Value is set to:

## RatingScore responds to these Invocations

### Property Name: CoBenefit

Property Value Description: Contains the values for the CoBenefit.

Template Value is set to:

## CoBenefit responds to these Invocations

## Properties

### Property Name: BenefitCategory

Property Value Description: A selection from a list of categories, ex. see the co-benefit.proto enumeration of BenefitCategories.

Template Value is set to:

## BenefitCategory responds to these Invocations

### Property Name: Description

Property Value Description: A description of the co-benefit that is not captured via the category.

Template Value is set to:

## Description responds to these Invocations

### Property Name: RatingScore

Property Value Description: A placeholder for some kind of rating or scoring of the relative co-benefit.

Template Value is set to:

## RatingScore responds to these Invocations

## Properties

### Property Name: BenefitCategory

Property Value Description: A selection from a list of categories, ex. see the co-benefit.proto enumeration of BenefitCategories.

Template Value is set to:

## BenefitCategory responds to these Invocations

### Property Name: Description

Property Value Description: A description of the co-benefit that is not captured via the category.

Template Value is set to:

## Description responds to these Invocations

### Property Name: RatingScore

Property Value Description: A placeholder for some kind of rating or scoring of the relative co-benefit.

Template Value is set to:

## RatingScore responds to these Invocations

## Properties

### Property Name: BenefitCategory

Property Value Description: A selection from a list of categories, ex. see the co-benefit.proto enumeration of BenefitCategories.

Template Value is set to:

## BenefitCategory responds to these Invocations

### Property Name: Description

Property Value Description: A description of the co-benefit that is not captured via the category.

Template Value is set to:

## Description responds to these Invocations

### Property Name: RatingScore

Property Value Description: A placeholder for some kind of rating or scoring of the relative co-benefit.

Template Value is set to:

## RatingScore responds to these Invocations

## Properties

### Property Name: CoBenefit

Property Value Description: Contains the values for the CoBenefit.

Template Value is set to:

## CoBenefit responds to these Invocations

## Properties

### Property Name: BenefitCategory

Property Value Description: A selection from a list of categories, ex. see the co-benefit.proto enumeration of BenefitCategories.

Template Value is set to:

## BenefitCategory responds to these Invocations

### Property Name: Description

Property Value Description: A description of the co-benefit that is not captured via the category.

Template Value is set to:

## Description responds to these Invocations

### Property Name: RatingScore

Property Value Description: A placeholder for some kind of rating or scoring of the relative co-benefit.

Template Value is set to:

## RatingScore responds to these Invocations

## Properties

### Property Name: BenefitCategory

Property Value Description: A selection from a list of categories, ex. see the co-benefit.proto enumeration of BenefitCategories.

Template Value is set to:

## BenefitCategory responds to these Invocations

### Property Name: Description

Property Value Description: A description of the co-benefit that is not captured via the category.

Template Value is set to:

## Description responds to these Invocations

### Property Name: RatingScore

Property Value Description: A placeholder for some kind of rating or scoring of the relative co-benefit.

Template Value is set to:

## RatingScore responds to these Invocations

## Properties

### Property Name: BenefitCategory

Property Value Description: A selection from a list of categories, ex. see the co-benefit.proto enumeration of BenefitCategories.

Template Value is set to:

## BenefitCategory responds to these Invocations

### Property Name: Description

Property Value Description: A description of the co-benefit that is not captured via the category.

Template Value is set to:

## Description responds to these Invocations

### Property Name: RatingScore

Property Value Description: A placeholder for some kind of rating or scoring of the relative co-benefit.

Template Value is set to:

## RatingScore responds to these Invocations

### Property Name: CoBenefit

Property Value Description: Contains the values for the CoBenefit.

Template Value is set to:

## CoBenefit responds to these Invocations

## Properties

### Property Name: BenefitCategory

Property Value Description: A selection from a list of categories, ex. see the co-benefit.proto enumeration of BenefitCategories.

Template Value is set to:

## BenefitCategory responds to these Invocations

### Property Name: Description

Property Value Description: A description of the co-benefit that is not captured via the category.

Template Value is set to:

## Description responds to these Invocations

### Property Name: RatingScore

Property Value Description: A placeholder for some kind of rating or scoring of the relative co-benefit.

Template Value is set to:

## RatingScore responds to these Invocations

## Properties

### Property Name: BenefitCategory

Property Value Description: A selection from a list of categories, ex. see the co-benefit.proto enumeration of BenefitCategories.

Template Value is set to:

## BenefitCategory responds to these Invocations

### Property Name: Description

Property Value Description: A description of the co-benefit that is not captured via the category.

Template Value is set to:

## Description responds to these Invocations

### Property Name: RatingScore

Property Value Description: A placeholder for some kind of rating or scoring of the relative co-benefit.

Template Value is set to:

## RatingScore responds to these Invocations

## Properties

### Property Name: BenefitCategory

Property Value Description: A selection from a list of categories, ex. see the co-benefit.proto enumeration of BenefitCategories.

Template Value is set to:

## BenefitCategory responds to these Invocations

### Property Name: Description

Property Value Description: A description of the co-benefit that is not captured via the category.

Template Value is set to:

## Description responds to these Invocations

### Property Name: RatingScore

Property Value Description: A placeholder for some kind of rating or scoring of the relative co-benefit.

Template Value is set to:

## RatingScore responds to these Invocations

### Specification (Sub) Property Set

## Paris Agreement Compliance

|  |  |
| --- | --- |
| Type: | PropertySet |
| Name: | Paris Agreement Compliance |
| Id: | f0ac1971-57dc-47b3-beeb-c1b9433457a2 |
| Visual: | &phi;<i>PAC</i> |
| Tooling: | phPAC |
| Version: | 1.0 |

## Definition

A token class that implements this property set will have labels or values required to determine the status of a carbon credit's compliance with various Paris Agreement regulations. Among them is the concept of Corresponding Adjustments (CAs), an accounting approach designed to ensure that emission reductions are counted only once in the context of the agreement.

## Example

Some buyers of carbon credits will want to continue to claim emission reductions and removals against their own footprint or the footprint of their products. These buyers would have a choice, they could choose to purchase and retire credits with CAs, noting that this would preclude the credits from contributing to the host country’s NDC. Of companies could choose to purchase credits without CAs, precisely because these companies want to contribute to the host country’s NDC. Another alternative might entail companies directly financing units that contribute to the NDC of the host country without claiming an offset or using the unit for neutrality purposes, which is possible with carbon credits that do not carry CAs.

## Analogies

|  |  |
| --- | --- |
| Name | Description |

## Dependencies

|  |  |  |
| --- | --- | --- |
| Artifact Type | Symbol | Description |
| PropertySet | phVL | The verified link is included in this property set. |

## Incompatible With

|  |  |  |
| --- | --- | --- |
| Artifact Type | Symbol | Id |

## Influenced By

|  |  |  |
| --- | --- | --- |
| Description | Symbol | Applies To |
| Roles should be used to control what accounts can set the PAC Property. | r | [ ] |

## Artifact Files

|  |  |  |
| --- | --- | --- |
| Content Type | File Name | File Content |
| Control | paris-agreement-compliance.proto |  |
| Uml | paris-agreement-compliance.md |  |

## Code Map

|  |  |  |  |
| --- | --- | --- | --- |
| Map Type | Name | Platform | Location |

## Implementation Map

|  |  |  |  |
| --- | --- | --- | --- |
| Map Type | Name | Platform | Location |

## Resource Map

|  |  |  |  |
| --- | --- | --- | --- |
| Map Type | Name | Location | Description |

|  |  |
| --- | --- |
| Property Set Representation Type | Description |
| Common | This property set's value is common or shared for all token instances in the class. Meaning all tokens in the class will share the same value of the property set. |

## Properties

### Property Name: PACompliance

Property Value Description: Contains the values for the properties.

Template Value is set to:

## PACompliance responds to these Invocations

## Properties

### Property Name: CA

Property Value Description: Contains the value for the Corresponding Adjustment.

Template Value is set to:

## CA responds to these Invocations

## Properties

### Property Name: CorrespondingAdjustment

Property Value Description: Either - None, ParisAgreementCompliant or ParisAgreementPendingCompliance

Template Value is set to:

## CorrespondingAdjustment responds to these Invocations

### Property Name: CA

Property Value Description: Contains the value for the Corresponding Adjustment.

Template Value is set to:

## CA responds to these Invocations

## Properties

### Property Name: CorrespondingAdjustment

Property Value Description: Either - None, ParisAgreementCompliant or ParisAgreementPendingCompliance

Template Value is set to:

## CorrespondingAdjustment responds to these Invocations

## Properties

### Property Name: CA

Property Value Description: Contains the value for the Corresponding Adjustment.

Template Value is set to:

## CA responds to these Invocations

## Properties

### Property Name: CorrespondingAdjustment

Property Value Description: Either - None, ParisAgreementCompliant or ParisAgreementPendingCompliance

Template Value is set to:

## CorrespondingAdjustment responds to these Invocations

### Property Name: CA

Property Value Description: Contains the value for the Corresponding Adjustment.

Template Value is set to:

## CA responds to these Invocations

## Properties

### Property Name: CorrespondingAdjustment

Property Value Description: Either - None, ParisAgreementCompliant or ParisAgreementPendingCompliance

Template Value is set to:

## CorrespondingAdjustment responds to these Invocations