Emoney

|  |  |
| --- | --- |
| Type: | TemplateDefinition |
| Name: | Emoney |
| Id: | 6fb84412-79c1-4b46-ae29-68b1e5710086 |
| Visual: | &tau;<sub>F</sub>{<i>d,t,g,h,c,SC</i>} |
| Tooling: | tF{d,t,g,h,c,SC} |
| Version: | 1.0 |

## Definition

The Emoney Token enables the issuance of regulated electronic money on blockchain networks, and its practical usage in real financial applications.

## Example

Financial institutions work today with electronic systems which hold account balances in databases on core banking systems. In order for an institution to be allowed to maintain records of client balances segregated and available for clients, such institution must be regulated under a known legal framework and must possess a license to do so. Maintaining a license under regulatory supervision entails ensuring compliance (i.e. performing KYC on all clients and ensuring good AML practices before allowing transactions) and demonstrating technical and operational solvency through periodic audits, so clients depositing funds with the institution can rest assured that their money is safe.

## Analogies

|  |  |
| --- | --- |
| Name | Description |
| Issuing Bonds | A bond is a debt security, under which the issuer owes the holders a debt and is obliged to pay them interest or to repay the principal at a later date. The issuance of bonds in in general handled by a Central Securities Depository (CSD). CSDs can use the Emoney Token to execute the whole issuing process, using real delivery vs payment, and settlement on a blockchain. This use case has been already implemented on io.cash. |
| Cash pooling | Cash pooling is a technique to combine credit and debit positions in various accounts into one account. Enabling the usage of real tokenized cash, to be used on chain, speeds up the process, decreasing costs and increases operational efficiency. This use case has been already implemented on io.cash. |
| Oil barrels | TODO |

## 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 | Emoney.proto |  |
| Uml | Emoney.md |  |

## Code Map

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

## Implementation Map

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

## Resource Map

|  |  |  |  |
| --- | --- | --- | --- |
| Map Type | Name | Location | Description |
| Resource | E-Money Token Standard | https://emoneytokenstandard.org |  |
| Resource | ioBUILDERS | https://io.builders | Contributor |
| Resource | Adhara | https://adhara.io | Contributor |
| Resource | ioCash | https://io.cash | IoCash is the world´s first B2B platform that makes it possible to operate with traditional money directly on blockchain. It is using the Emoney Token to make that possible. |
| Resource | Contact | emtoken@io.builders |  |

# Template Definition

## Template Formula Reference: tF{d,t,g,h,c,SC}

Name: tF{d,t,g,h,c,SC}

Id: a46301ea-5791-4a21-aa20-e3b6aeb53343

Reference Notes: Emoney

# Base Details

|  |  |
| --- | --- |
| Token Name: |  |
| Symbol: |  |
| Owner: |  |
| Quantity: | 0 |
| Decimals: | 2 |
| Constructor Name: | Constructor |

# Behaviors

## Behavior Reference: Subdividable

Reference Notes: Subdividable

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

### Applies To

### Invocations

### Influence Bindings

### Properties

#### Name: Decimals

Value Description: Set to Two, mirroring the decimals used in most fiat currencies

Template Value: 2

### Invocations

#### GetDecimals

Id: 2ca7fbb2-ce98-4dda-a6ae-e4ac2527bb33

Description: Should return 2

##### Request

Control Message: GetDecimalsRequest

Description:

###### Parameters

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

##### Response

Control Message: GetDecimalsResponse

Description: Return 2

###### Parameters

|  |  |
| --- | --- |
| Name | Value |
| Decimals | 2 |

### Properties

## Behavior Reference: Transferable

Reference Notes: Transferable

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

### Applies To

### Invocations

#### 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 subdividable 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

Control Message: TransferRequest

Description: The request

###### Parameters

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

##### Response

Control Message: TransferResponse

Description: The 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 subdividable 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

Control Message: TransferFromRequest

Description: The request

###### Parameters

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

##### Response

Control Message: TransferFromResponse

Description: The 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. |

### Influence Bindings

### Properties

## Behavior Reference: Delegable

Reference Notes: Delegable

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

### Applies To

### Invocations

#### Allowance

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

Control Message: AllowanceRequest

Description: The request

###### Parameters

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

##### Response

Control Message: AllowanceResponse

Description: The response

###### Parameters

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

#### Approve Allowance

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

Control Message: AllowanceRequest

Description: The request

###### Parameters

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

##### Response

Control Message: ApproveResponse

Description: The 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). |

### Influence Bindings

### Properties

## Behavior Reference: Holdable

Reference Notes: Holdable

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

### Applies To

### Invocations

#### Hold

Id: 6cc942c8-afa4-4bab-9737-27a0b7b24a5b

Description: Request the create a hold on behalf of the owner of the token in favor of to the party or account provided in the To field of the request. It specifies a notary who is responsible to either execute or release the hold.

##### Request

Control Message: HoldRequest

Description: The request

###### Parameters

|  |  |
| --- | --- |
| Name | Value |
| OperationId | An unique ID to identify the hold |
| To | AccountId to transfer ownership of token(s) to after the hold is executed. |
| Notary | AccountId of the notary |
| Quantity | Number of tokens to be put on hold. |
| TimeToExpiration | The duration until the hold is expired. If it is '0' the hold must be perpetual. |

##### Response

Control Message: Hold Response

Description: The response

###### Parameters

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

#### HoldFrom

Id: 67f2d012-5b2d-46bc-8ee7-befdf90f66d8

Description: Request the create a hold on behalf of the party or account provided in the From field in favor of to the party or account provided in the To field of the request. It specifies a notary who is responsible to either execute or release the hold.

##### Request

Control Message: TransferFromRequest

Description: The request

###### Parameters

|  |  |
| --- | --- |
| Name | Value |
| OperationId | An unique ID to identify the hold |
| From | AccountId oon which behalf the hold should be created. |
| To | AccountId to transfer ownership of token(s) to after the hold is executed. |
| Notary | AccountId of the notary |
| Quantity | Number of tokens to be put on hold. |
| TimeToExpiration | The duration until the hold is expired. If it is '0' the hold must be perpetual. |

##### Response

Control Message: TransferFromResponse

Description: The response

###### Parameters

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

#### ExecuteHold

Id: 4946eea9-c59e-4192-9115-2ba57821936c

Description: Request to execute a hold. Execute means that the specified value is transferred the owner of the token in favor of to the party or account provided in the To field of the Hold / HoldFrom request. If the specified value is less than the hold value the remaining amount is available again to the owner of the tokens. Only the account specified in the Notary field of the Hold / HoldFrom request can make a successful request.

##### Request

Control Message: ExecuteHoldRequest

Description: The request

###### Parameters

|  |  |
| --- | --- |
| Name | Value |
| OperationId | An unique ID to identify the hold |
| Quantity | Number of tokens to be put on hold. |

##### Response

Control Message: ExecuteHoldResponse

Description: The response

###### Parameters

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

#### ReleaseHold

Id: d07c8a5a-be40-479c-aa0d-7ac80b7ca9b3

Description: Request to release a hold. Release means that the transfer is not executed and the held amount is available again for the owner of the token. Until a hold has expired it can only be released by the notary or the party or account provided in the To field of the Hold / HoldFrom request. After it has expired it can be released by any account.

##### Request

Control Message: ReleaseHoldRequest

Description: The request

###### Parameters

|  |  |
| --- | --- |
| Name | Value |
| OperationId | An unique ID to identify the hold |

##### Response

Control Message: ReleaseHoldResponse

Description: The response

###### Parameters

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

### Influence Bindings

### Properties

## Behavior Reference: Compliant

Reference Notes: Compliant

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

### Applies To

### Invocations

#### CheckTransferAllowed

Id: 3f591127-0508-445b-b449-4adc3d8d90e9

Description: Checks if the transfer request is allowed to be executed with the given parameters.

##### Request

Control Message: CheckTransferAllowedRequest

Description: The request

###### Parameters

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

##### Response

Control Message: CheckTransferAllowedResponse

Description: The response

###### Parameters

|  |  |
| --- | --- |
| Name | Value |
| Result | A boolean value whereas true means the transfer is allowed and false means it is not. |

#### CheckMintAllowed

Id: 0323b374-71af-48f6-93ff-2a63366267db

Description: Checks if the mint request is allowed to be executed with the given parameters.

##### Request

Control Message: CheckMintAllowedRequest

Description: The request

###### Parameters

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

##### Response

Control Message: CheckMintAllowedResponse

Description: The response

###### Parameters

|  |  |
| --- | --- |
| Name | Value |
| Result | A boolean value whereas true means the minting request is allowed and false means it is not. |

#### CheckBurnAllowed

Id: 8edffc4d-d14e-4a98-8c96-338835d5534c

Description: Checks if the burn request is allowed to be executed with the given parameters.

##### Request

Control Message: CheckBurnAllowedRequest

Description: The request

###### Parameters

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

##### Response

Control Message: CheckMintAllowedResponse

Description: The response

###### Parameters

|  |  |
| --- | --- |
| Name | Value |
| Result | A boolean value whereas true means the burn request is allowed and false means it is not. |

### Influence Bindings

### Properties

## Behavior Groups

Name: Supply Control

Id: 91cb89b6-a2ce-44ff-b3a0-f0cb3f117e56

Reference Notes: Supply Control

## Reference Values

## Artifact Files

|  |  |  |
| --- | --- | --- |
| Content Type | File Name | File Content |

## Code Map

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

## Implementation Map

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

## Resource Map

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

## Behavior

## Behavior Reference: Mintable

Reference Notes: Mintable in SupplyControl will be bound to the Roles behavior to determine if the requesting minter is allowed to invoke the behavior.

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

### Applies To

### Invocations

### Influence Bindings

### Properties

## Behavior

## Behavior Reference: Burnable

Reference Notes: Burnable is not modified from the referenced behavior.

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

### Applies To

### Invocations

### Influence Bindings

### Properties

## Behavior

## Behavior Reference: Roles

Reference Notes: Roles support requires that a role or group called 'Minters' be created that allows for account to be added. These accounts will be allowed to invoke MintTo.

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

### Applies To

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

### Invocations

### Influence Bindings

Influenced Id: f9224e90-3cab-45bf-b5dc-0175121e2ead

Influenced Name: Mintable

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

Influence Type: Intercept

Influencing Invocation:

### RoleCheck

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

Check to see if the account is in the Role called 'Minters'

#### Request

Control Message: IsInRole

Description: Checking the 'Minters' role.

#### Parameters

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

#### Response

Control Message: True/False

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

#### Parameters

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

Influenced Invocation:

### MintTo

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

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

Control Message: MintToRequest

Description: The request

#### Parameters

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

#### Response

Control Message: MintToResponse

Description: The response

#### Parameters

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

### Properties

#### Name: Role

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

Template Value: Minters

### Invocations

#### GetMinters

Id:

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

##### Request

Control Message: GetMintersRequest

Description: The request

###### Parameters

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

##### Response

Control Message: GetMintersResponse

Description: The response

###### Parameters

|  |  |
| --- | --- |
| Name | Value |
| Members | Returning the list of accounts in the 'Minters' 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 'Minters' |
| AccountAddress | Address, name or identifier of the account to be added to the 'Minters' 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 'Minters' |
| 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 'Minters' |
| 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. |

### Properties

## Property Sets

## Child Tokens