ICO Contract

This contract is used for auto disbursement of dApp tokens in exchange of EOS tokens (which can be modified) at ICO rates (set for multiple phases).

Features

- Auto-disbursement of TRPM tokens from ICO contract after receiving EOS tokens from buyer.
- Also, Manual-disbursement of TRPM tokens from ICO contract is possible, if `"vigorico::disburse"` action is not added as inline action, but rather in the `vigorico` contract.
- ICO can be conducted in multiple phases completely independent of each other.
- ICO rate is - 0.15 EOS/1 TRPM

About

- contract name - `tropiumico`
- contract's account name - `trpm11111ico`
- action
- `seticorate`
- `deposit` [notify action]
- `disburse` [Inline action]
- `sendalert` [Inline action]
- table
- `icorates`
- `fund`

Compile

```
$ eosio-cpp tropiumico.cpp -o tropiumico.wasm
Warning, empty ricardian clause file
Warning, empty ricardian clause file
Warning, action <seticorate> does not have a ricardian contract
Warning, action <disburse> does not have a ricardian contract
Warning, action <sendalert> does not have a ricardian contract
Warning, action <testdelico> does not have a ricardian contract
Warning, action <testdelfund> does not have a ricardian contract
Warning, action <seticorate> does not have a ricardian contract
Warning, action <disburse> does not have a ricardian contract
Warning, action <sendalert> does not have a ricardian contract
```

Deploy

- Deploy contract

```
$ cleost set contract trpm11111ico ./
Reading WASM from
/mnt/f/Coding/github_repos/eosio_tropium_contracts/tropiumico/tropiumico.w
asm...
Publishing contract...
executed transaction:
c68fffdd79a59a94c3ef364b3120a065d23e64be10336717d80feca0d624a4be   12512
bytes   994 us
#          eosio <= eosio::setcode
{"account":"trpm11111ico","vmtype":0,"vmversion":0,"code":"0061736d0100000
001de012360000060017e00600...
#          eosio <= eosio::setabi
{"account":"trpm11111ico","abi":"0e656f73696f3a3a6162692f312e3100070864697
3627572736500040b726563656...
warning: transaction executed locally, but may not be confirmed by the
network yet         ]
```

- Adding eosio.code to permissions (for inline actions)

```
$ cleost set account permission trpm11111ico active --add-code
executed transaction:
a19c54ad8a97cf7475b8cd61f6a09273fa906d63f536ea4d7adf43b3f29a95c0   184
bytes   146 us
#          eosio <= eosio::updateauth
{"account":"trpm11111ico","permission":"active","parent":"owner","auth":
{"threshold":1,"keys":[{"key...
warning: transaction executed locally, but may not be confirmed by the
network yet          ]
```

Testing

Action - `seticorate`

- `tropiumchain` set the ICO rate for phase A

```
$ cleost push action trpm11111ico seticorate '["a", "6.6700 TRPM"]' -p
tropiumchain@active
executed transaction:
c5b80350bcd1571637ebad4cee64a4626693df8dd57cb94f2c3e540d7214a751   120
bytes   163 us
#   trpm11111ico <= trpm11111ico::seticorate
{"phase_type":"a","current_price":"6.6700 TRPM"}
warning: transaction executed locally, but may not be confirmed by the
network yet          ]
```

- view the table

```
$ cleost get table trpm11111ico trpm11111ico icorates --show-payer
{
  "rows": [{
      "data": {
        "phase_type": "a",
        "current_price": "6.6700 TRPM"
      },
      "payer": "trpm11111ico"
    }
  ],
  "more": false,
  "next_key": ""
}
```

- Again set the ICO rate again for phase A & get error:

```
$ cleost push action trpm11111ico seticorate '["a", "6.6700 TRPM"]' -p
tropiumchain@active
Error 3050003: eosio_assert_message assertion failure
Error Details:
assertion failure with message: the parsed current price is same as the
set one.
pending console output:
```

- `tropiumchain` set the ICO rate for phase B

```
$ cleost push action trpm11111ico seticorate '["b", "9.6700 TRPM"]' -p
tropiumchain@active
executed transaction:
2dd8fd735a77c08c9bc891f707614a7a61badc3c4ec700930647de7abc20d241   120
bytes   168 us
#   trpm11111ico <= trpm11111ico::seticorate
{"phase_type":"b","current_price":"9.6700 TRPM"}
warning: transaction executed locally, but may not be confirmed by the
network yet          ]
```

- view the table

```
$ cleost get table trpm11111ico trpm11111ico icorates --show-payer
{
  "rows": [{
      "data": {
        "phase_type": "a",
        "current_price": "6.6700 TRPM"
      },
      "payer": "trpm11111ico"
    },{
      "data": {
        "phase_type": "b",
        "current_price": "9.6700 TRPM"
      },
      "payer": "trpm11111ico"
    }
  ],
  "more": false,
  "next_key": ""
}
```

Action - `deposit` (Payable action)

- `trpmuser1111` transfer some "3.0000 EOS" to ICO funding in phase-A & gets error due to unfit memo for this action

```
$ cleost push action eosio.token transfer '["trpmuser1111",
"trpm11111ico", "3.0000 EOS", "transfer EOS for ICO"]' -p
trpmuser1111@active
Error 3050003: eosio_assert_message assertion failure
Error Details:
assertion failure with message: For sending to this contract, parsed memo
can either be 'phase A' or 'phase B' or 'phase C'
pending console output:
```

- `trpmuser1111` transfer some "3.0000 EOS" to ICO funding in phase-A

```
$ cleost push action eosio.token transfer '["trpmuser1111",
"trpm11111ico", "3.0000 EOS", "phase A"]' -p trpmuser1111@active
executed transaction:
4db8a386f077e00c08b7c28442fa662ad6b4ae3df65a99af8d9f62c4a09f4ba4   136
bytes  402 us
#   eosio.token <= eosio.token::transfer
{"from":"trpmuser1111","to":"trpm11111ico","quantity":"3.0000
EOS","memo":"phase A"}
#   trpmuser1111 <= eosio.token::transfer
{"from":"trpmuser1111","to":"trpm11111ico","quantity":"3.0000
EOS","memo":"phase A"}
#   trpm11111ico <= eosio.token::transfer
{"from":"trpmuser1111","to":"trpm11111ico","quantity":"3.0000
EOS","memo":"phase A"}
#   trpm11111ico <= trpm11111ico::disburse
{"receiver_ac":"trpmuser1111","phase_type":"a","disburse_qty":"20.0100
TRPM","memo":"disburse for ph...
#   trpm11111ico <= trpm11111ico::sendalert
{"user":"trpmuser1111","message":"You receive '20.0100 TRPM' for
depositing '3.0000 EOS' to ICO cont...
#   trpm111token <= trpm111token::transfer
{"from":"trpm11111ico","to":"trpmuser1111","quantity":"20.0100
TRPM","memo":"TROPIUM ICO contract di...
#   trpm11111ico <= trpm111token::transfer
{"from":"trpm11111ico","to":"trpmuser1111","quantity":"20.0100
TRPM","memo":"TROPIUM ICO contract di...
#   trpmuser1111 <= trpm111token::transfer
{"from":"trpm11111ico","to":"trpmuser1111","quantity":"20.0100
TRPM","memo":"TROPIUM ICO contract di...
#   trpmuser1111 <= trpm11111ico::sendalert
{"user":"trpmuser1111","message":"You receive '20.0100 TRPM' for
depositing '3.0000 EOS' to ICO cont...
warning: transaction executed locally, but may not be confirmed by the
network yet            ]
```

- View the TRPM balance of `trpmuser1111` buyer

```
$ cleost get table trpm111token trpmuser1111 accounts
{
  "rows": [{
      "balance": "20.0100 TRPM"
    }
  ],
  "more": false,
  "next_key": ""
}
```

- View the fund table of `trpmuser1112` buyer

```
$ cleost get table trpm11111ico trpmuser1111 fund --show-payer
{
  "rows": [{
      "data": {
        "phase_type": "a",
        "tot_deposit_qty": "3.0000 EOS",
        "tot_disburse_qty": "20.0100 TRPM"
      },
      "payer": "trpm11111ico"
    }
  ],
  "more": false,
  "next_key": ""
}
```

- So, basically, buyer sends `3.0000 EOS` & receives `20.0100 TRPM` tokens instead

- `trpmuser1112` successfully transfer some "5.0000 EOS" to ICO funding in phase-A

```
$ cleost push action eosio.token transfer '["trpmuser1112",
"trpm11111ico", "5.0000 EOS", "phase A"]' -p trpmuser1112@active
executed transaction:
d0e1035419466302143090d4c02992d3185e64f5d9bf278f3b6f08c265b84fa5  136
bytes  360 us
#   eosio.token <= eosio.token::transfer
{"from":"trpmuser1112","to":"trpm11111ico","quantity":"5.0000
EOS","memo":"phase A"}
#   trpmuser1112 <= eosio.token::transfer
{"from":"trpmuser1112","to":"trpm11111ico","quantity":"5.0000
EOS","memo":"phase A"}
#   trpm11111ico <= eosio.token::transfer
{"from":"trpmuser1112","to":"trpm11111ico","quantity":"5.0000
EOS","memo":"phase A"}
#   trpm11111ico <= trpm11111ico::disburse
{"receiver_ac":"trpmuser1112","phase_type":"a","disburse_qty":"33.3500
TRPM","memo":"disburse for ph...
#   trpm11111ico <= trpm11111ico::sendalert
{"user":"trpmuser1112","message":"You receive '33.3500 TRPM' for
depositing '5.0000 EOS' to ICO cont...
#   trpm111token <= trpm111token::transfer
{"from":"trpm11111ico","to":"trpmuser1112","quantity":"33.3500
TRPM","memo":"TROPIUM ICO contract di...
#   trpm11111ico <= trpm111token::transfer
{"from":"trpm11111ico","to":"trpmuser1112","quantity":"33.3500
TRPM","memo":"TROPIUM ICO contract di...
#   trpmuser1112 <= trpm111token::transfer
{"from":"trpm11111ico","to":"trpmuser1112","quantity":"33.3500
TRPM","memo":"TROPIUM ICO contract di...
#   trpmuser1112 <= trpm11111ico::sendalert
{"user":"trpmuser1112","message":"You receive '33.3500 TRPM' for
depositing '5.0000 EOS' to ICO cont...
warning: transaction executed locally, but may not be confirmed by the
network yet          ]
```

- View the TRPM balance of `trpmuser1112` buyer

```
$ cleost get table trpm111token trpmuser1112 accounts
{
  "rows": [{
      "balance": "33.3500 TRPM"
    }
  ],
  "more": false,
  "next_key": ""
}
```

- View the fund table of `trpmuser1112` buyer

```
$ cleost get table trpm11111ico trpmuser1112 fund --show-payer
{
  "rows": [{
      "data": {
        "phase_type": "a",
        "tot_deposit_qty": "5.0000 EOS",
        "tot_disburse_qty": "33.3500 TRPM"
      },
      "payer": "trpm11111ico"
    }
  ],
  "more": false,
  "next_key": ""
}
```

- So, basically, buyer sends `5.0000 EOS` & receives `33.3500 TRPM` tokens instead

- `trpmuser1112` transfer some "8.0000 EOS" to ICO funding in phase B

```
$ cleost push action eosio.token transfer '["trpmuser1112",
"trpm11111ico", "8.0000 EOS", "phase B"]' -p trpmuser1112@active
executed transaction:
f946f128e4cb250e5af213e8275b9d9e940ee0a6fc062d6347989e06713b3dcd   136
bytes   288 us
#    eosio.token <= eosio.token::transfer
{"from":"trpmuser1112","to":"trpm11111ico","quantity":"8.0000
EOS","memo":"phase B"}
#   trpmuser1112 <= eosio.token::transfer
{"from":"trpmuser1112","to":"trpm11111ico","quantity":"8.0000
EOS","memo":"phase B"}
#   trpm11111ico <= eosio.token::transfer
{"from":"trpmuser1112","to":"trpm11111ico","quantity":"8.0000
EOS","memo":"phase B"}
#   trpm11111ico <= trpm11111ico::disburse
{"receiver_ac":"trpmuser1112","phase_type":"b","disburse_qty":"77.3600
TRPM","memo":"disburse for ph...
#   trpm11111ico <= trpm11111ico::sendalert
{"user":"trpmuser1112","message":"You receive '77.3600 TRPM' for
depositing '8.0000 EOS' to ICO cont...
#   trpm111token <= trpm111token::transfer
{"from":"trpm11111ico","to":"trpmuser1112","quantity":"77.3600
TRPM","memo":"TROPIUM ICO contract di...
#   trpm11111ico <= trpm111token::transfer
{"from":"trpm11111ico","to":"trpmuser1112","quantity":"77.3600
TRPM","memo":"TROPIUM ICO contract di...
#   trpmuser1112 <= trpm111token::transfer
{"from":"trpm11111ico","to":"trpmuser1112","quantity":"77.3600
TRPM","memo":"TROPIUM ICO contract di...
#   trpmuser1112 <= trpm11111ico::sendalert
{"user":"trpmuser1112","message":"You receive '77.3600 TRPM' for
depositing '8.0000 EOS' to ICO cont...
warning: transaction executed locally, but may not be confirmed by the
network yet            ]
```

- View the TRPM balance of `trpmuser1112` buyer

```
$ cleost get table trpm111token trpmuser1112 accounts
{
  "rows": [{
      "balance": "110.7100 TRPM"
    }
  ],
  "more": false,
  "next_key": ""
}
```

- View the fund table of `trpmuser1112` buyer

```
$ cleost get table trpm11111ico trpmuser1112 fund --show-payer
{
  "rows": [{
      "data": {
        "phase_type": "a",
        "tot_deposit_qty": "5.0000 EOS",
        "tot_disburse_qty": "33.3500 TRPM"
      },
      "payer": "trpm11111ico"
    },{
      "data": {
        "phase_type": "b",
        "tot_deposit_qty": "8.0000 EOS",
        "tot_disburse_qty": "77.3600 TRPM"
      },
      "payer": "trpm11111ico"
    }
  ],
  "more": false,
  "next_key": ""
}
```

- `trpmuser1112` wants to buy "500 TRPM" to join rehab centre. So, he transfers "75.0000 EOS" @ phase_type A rate

```
$ cleost push action eosio.token transfer '["trpmuser1112",
"trpm11111ico", "75.0000 EOS", "phase A"]' -p trpmuser1112@active
executed transaction:
a89c5827370a153130e20abe0fba13bec0f09e1aaed2d8d0fddc5a3f85504e59  136
bytes  353 us
#   eosio.token <= eosio.token::transfer
{"from":"trpmuser1112","to":"trpm11111ico","quantity":"75.0000
EOS","memo":"phase A"}
#  trpmuser1112 <= eosio.token::transfer
{"from":"trpmuser1112","to":"trpm11111ico","quantity":"75.0000
EOS","memo":"phase A"}
#  trpm11111ico <= eosio.token::transfer
{"from":"trpmuser1112","to":"trpm11111ico","quantity":"75.0000
EOS","memo":"phase A"}
#  trpm11111ico <= trpm11111ico::disburse
{"receiver_ac":"trpmuser1112","phase_type":"a","disburse_qty":"500.2500
TRPM","memo":"disburse for p...
#  trpm11111ico <= trpm11111ico::sendalert
{"user":"trpmuser1112","message":"You receive '500.2500 TRPM' for
depositing '75.0000 EOS' to ICO co...
#  trpm111token <= trpm111token::transfer
{"from":"trpm11111ico","to":"trpmuser1112","quantity":"500.2500
TRPM","memo":"TROPIUM ICO contract d...
#  trpm11111ico <= trpm111token::transfer
{"from":"trpm11111ico","to":"trpmuser1112","quantity":"500.2500
TRPM","memo":"TROPIUM ICO contract d...
#  trpmuser1112 <= trpm111token::transfer
{"from":"trpm11111ico","to":"trpmuser1112","quantity":"500.2500
TRPM","memo":"TROPIUM ICO contract d...
#  trpmuser1112 <= trpm11111ico::sendalert
{"user":"trpmuser1112","message":"You receive '500.2500 TRPM' for
depositing '75.0000 EOS' to ICO co...
warning: transaction executed locally, but may not be confirmed by the
network yet            ]
```

- View the TRPM balance of `trpmuser1112` buyer

```
$ cleost get table trpm111token trpmuser1112 accounts
{
  "rows": [{
      "balance": "610.9600 TRPM"
    }
  ],
  "more": false,
  "next_key": ""
}
```

- View the fund table of `trpmuser1112` buyer

```
$ cleost get table trpm11111ico trpmuser1112 fund --show-payer
{
  "rows": [{
      "data": {
        "phase_type": "a",
        "tot_deposit_qty": "80.0000 EOS",
        "tot_disburse_qty": "533.6000 TRPM"
      },
      "payer": "trpm11111ico"
    },{
      "data": {
        "phase_type": "b",
        "tot_deposit_qty": "8.0000 EOS",
        "tot_disburse_qty": "77.3600 TRPM"
      },
      "payer": "trpm11111ico"
    }
  ],
  "more": false,
  "next_key": ""
}
```

- Here, note that the total balance in TRPM matches with the sum of disbursement of phase A & B till now.

- This situation is only possible, if the user doesn't receive TRPM tokens from any other source.

- `trpmuser1112` transfer some "10.0000 EOS" to ICO funding in phase C

```
$ cleost push action eosio.token transfer '["trpmuser1112",
"trpm11111ico", "10.0000 EOS", "phase C"]' -p trpmuser1112@active
Error 3050003: eosio_assert_message assertion failure
Error Details:
assertion failure with message: ICO rate for phase c is not
set.'tropiumchain' must set using 'seticorate'
pending console output:
```

TODO

☐ Phase from_date, to_date for ICO

Transaction History

1. For Jungle 3 Testnet, view here
   (https://jungle3history.cryptolions.io/v2/history/get_actions?account=trpmuser1112)

2. Copy the JSON response from above and paste it into here (http://jsonviewer.stack.hu/) to see in JSON format.