ERC20 // Vault

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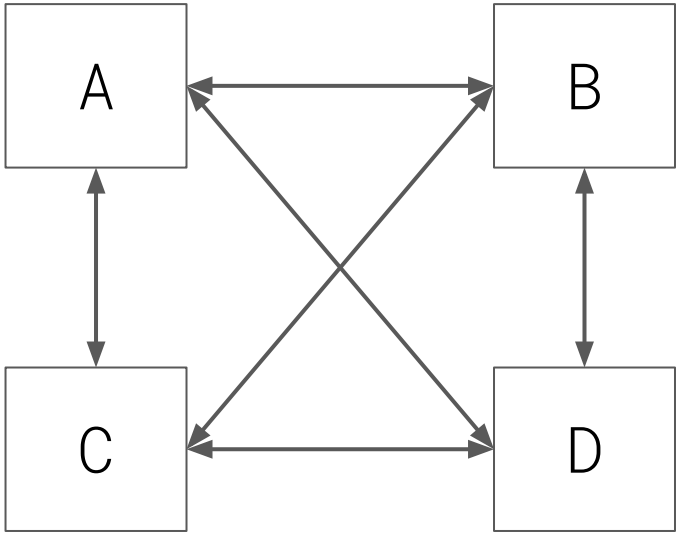
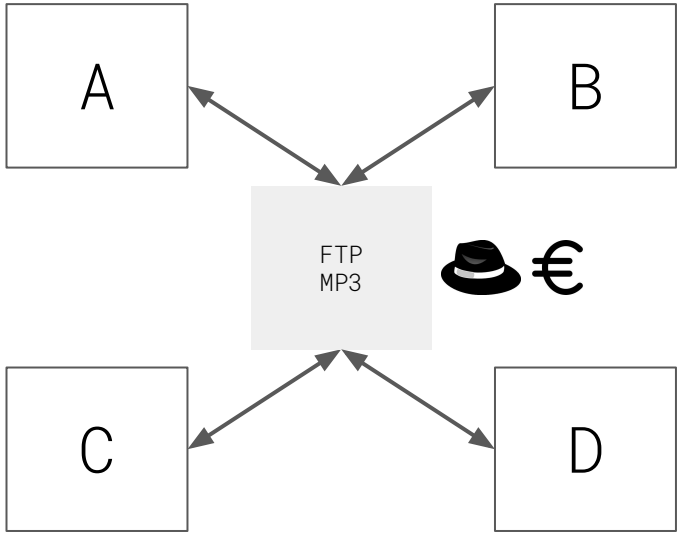
@codecontext

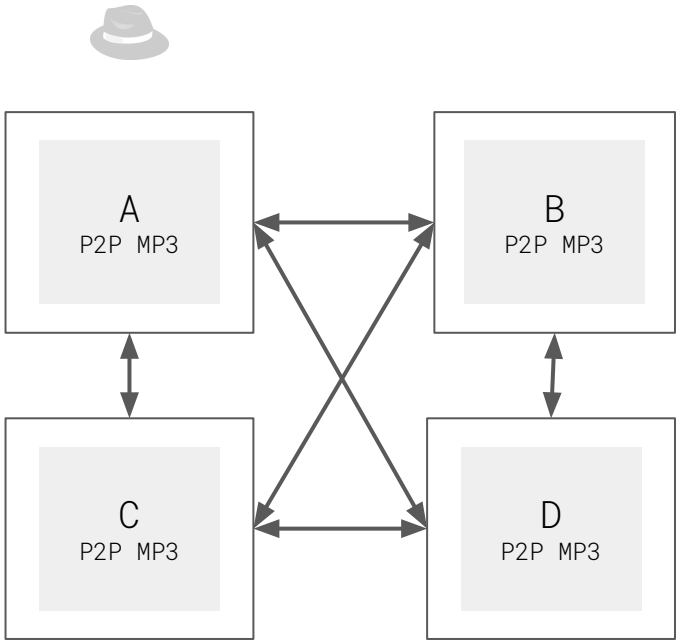
I.Ethereum VM
II. ERC20, Tokens & ICOs
III. Vault + controller
IV. Q&A

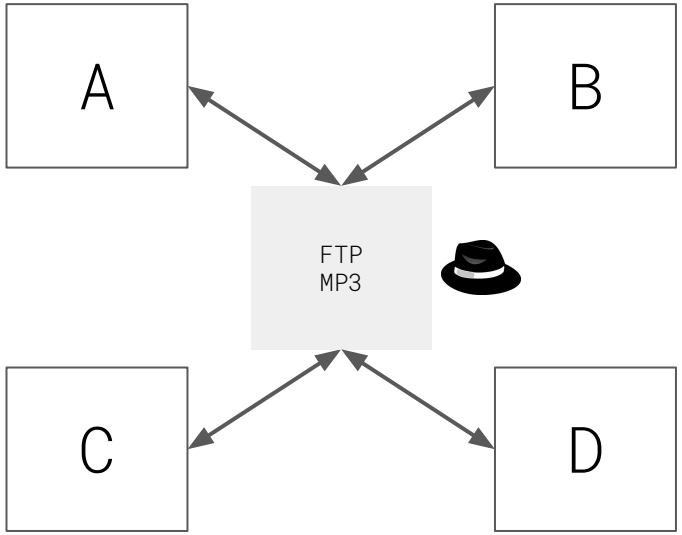
from
centralized information
to
decentralized applications


A
B
C
D

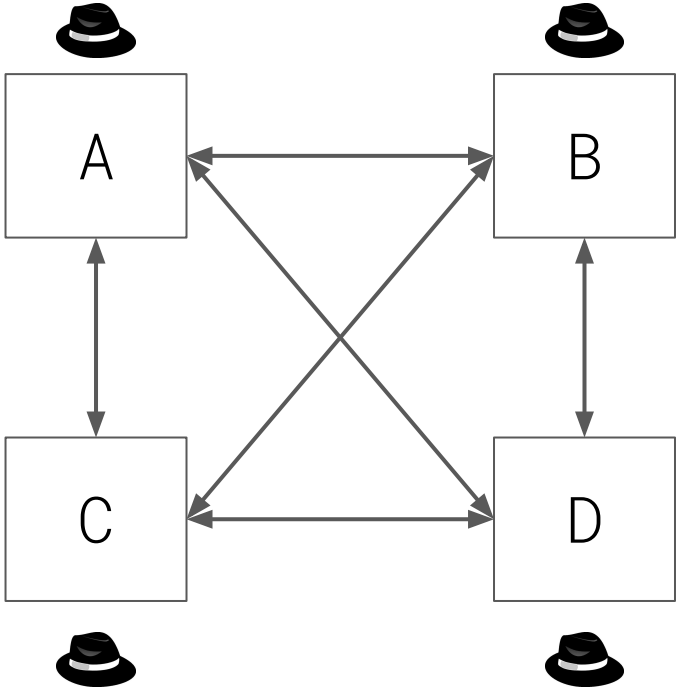

A
B
FTP
MP3
C
D

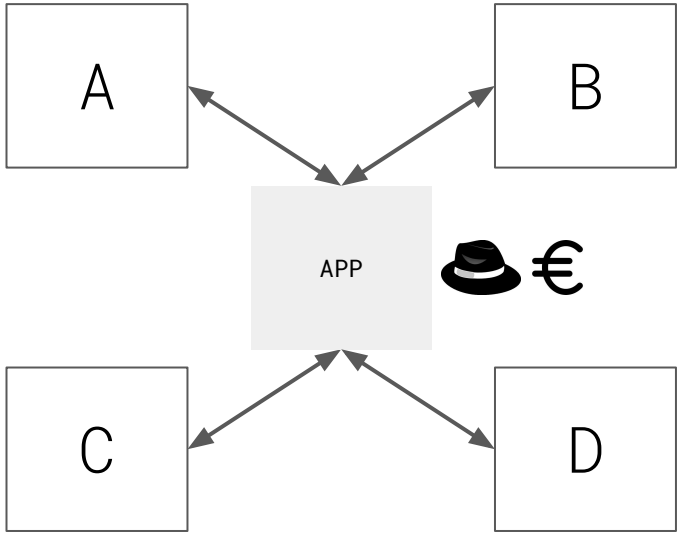
Who owns computer systems?





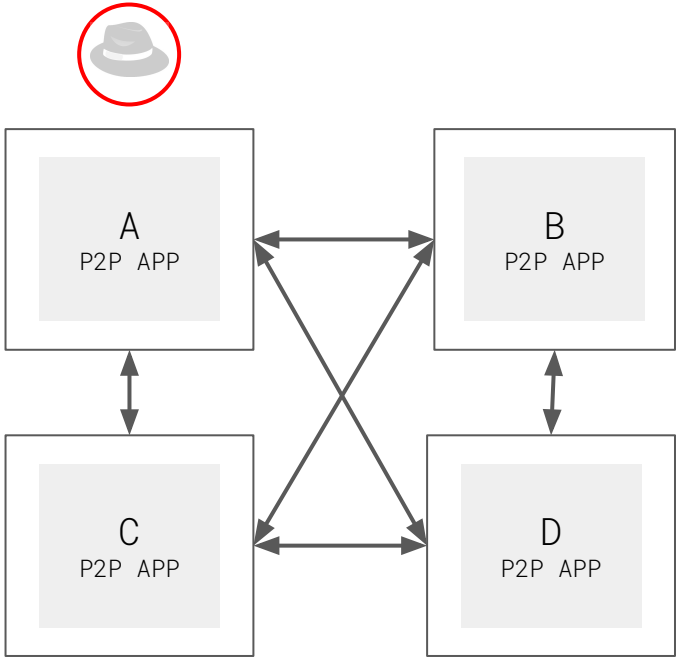
Who owns computer systems?

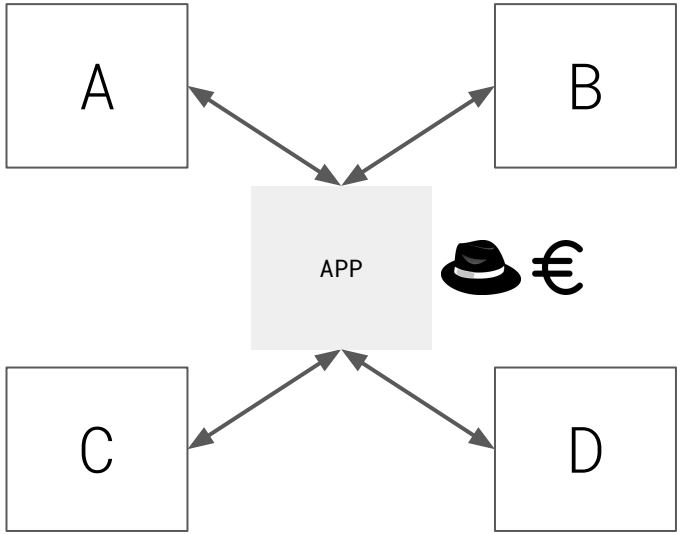


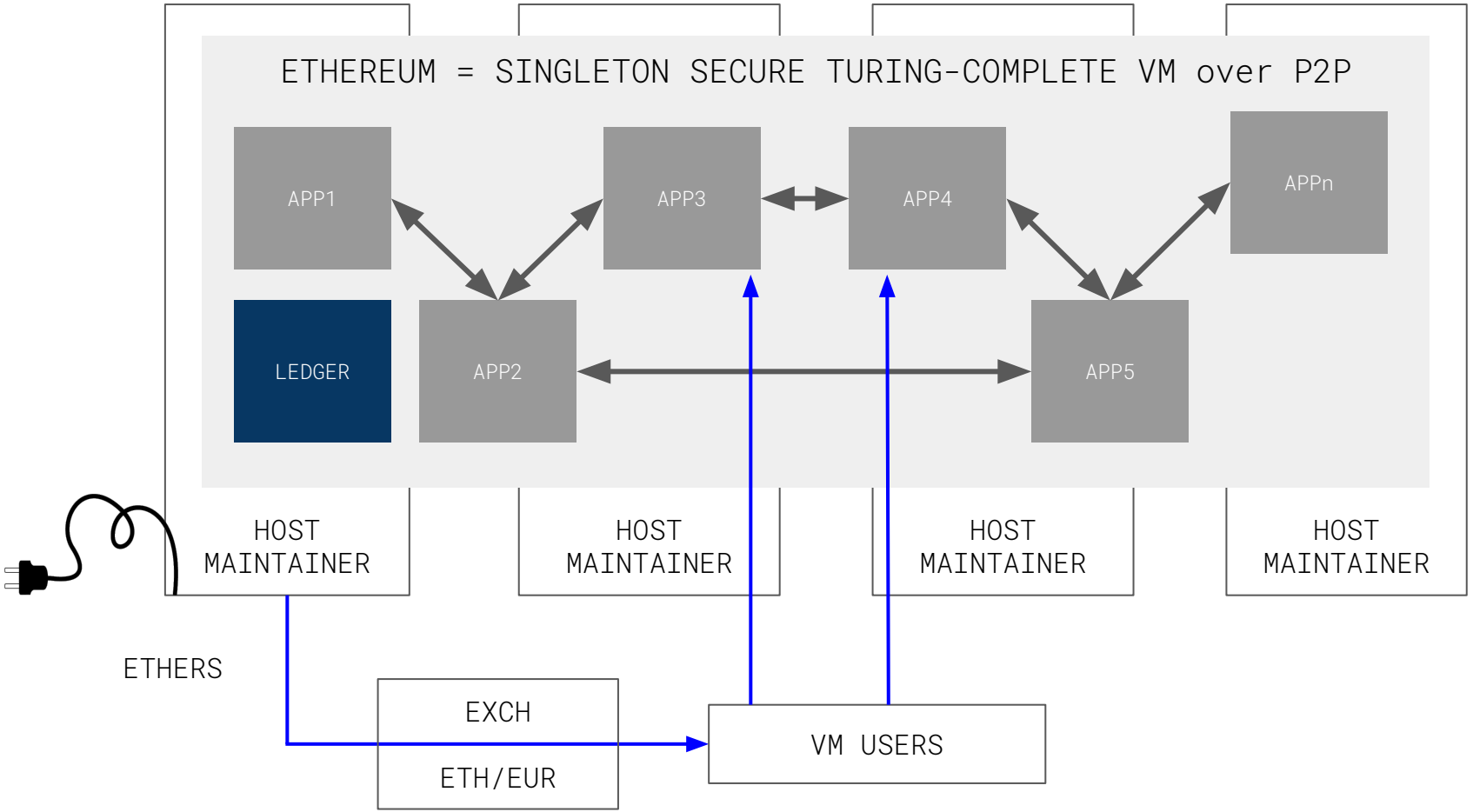


Amazon
AirBnb, Uber, etc…
Swift
State

Who owns computer systems?






ETHEREUM = SINGLETON SECURE TURING-COMPLETE VM over P2P
APP1
APP3
APP4
APPn
LEDGER
APP2
APP5
HOST MAINTAINER
HOST MAINTAINER
HOST MAINTAINER
HOST MAINTAINER
ETHERS
EXCH
ETH/EUR
VM USERS

ethereum is a technology

http://gavwood.com/Paper.pdf

geth / parity / cpp-ethereum / pyethereum

and a global implementation

https://ethstats.net/ https://etherscan.io/

with an market valued embedded virtual coin (IoI vs IoE)

https://coinmarketcap.com/currencies/ethereum/

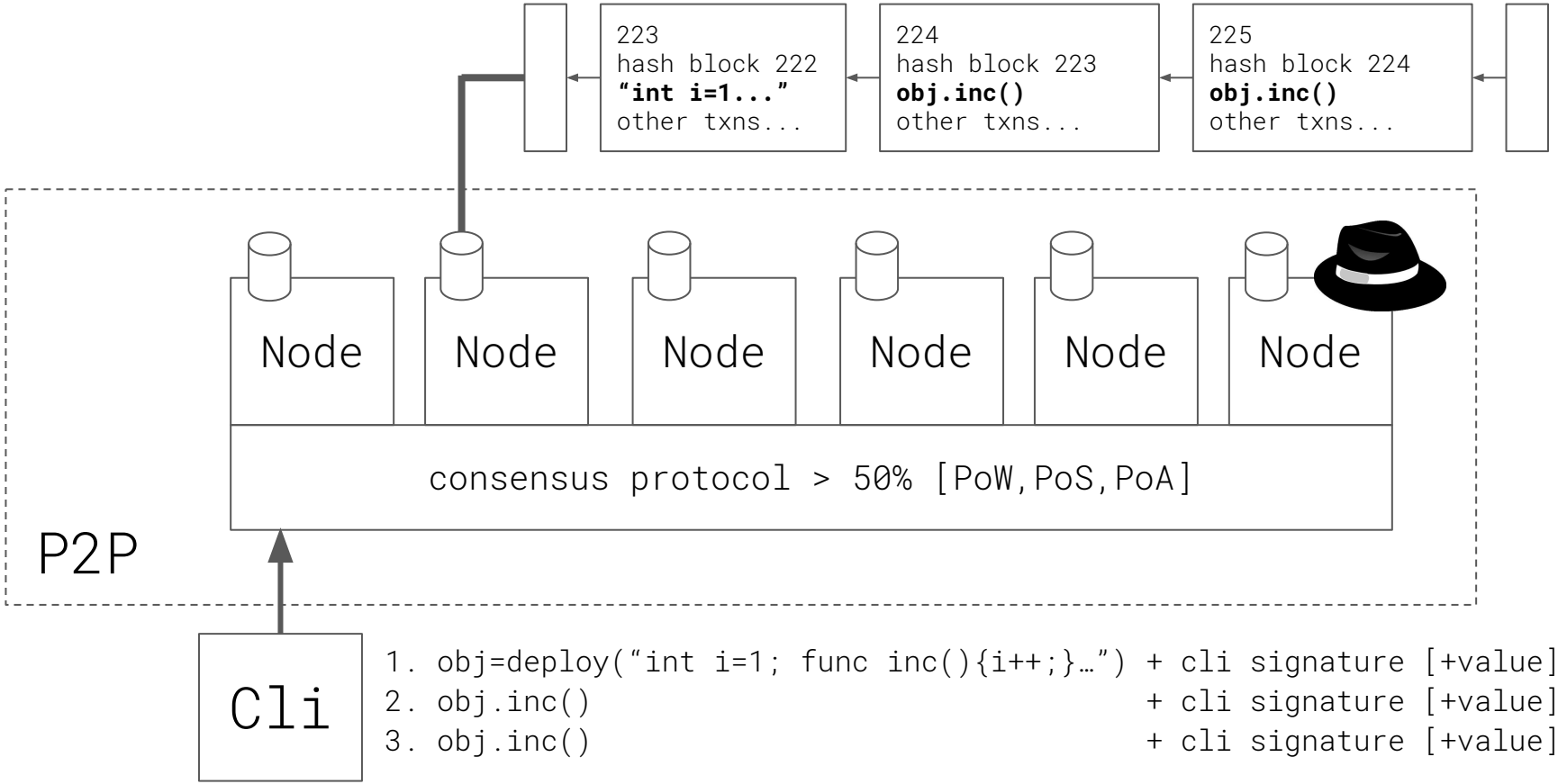
Ethereum is an architecture to execute code using a P2P network.

```
function Counter {
     uint i=1;
     function inc() {
        i++;
     }
     function get() returns (uint) {
          return i;
     }
}
```

What is execute code?

- deploy code to compiled be executed
- execute method inc()
- execute method inc()
- execute method inc()

blockchain is a secure, append-only transaction/state database
where a block is sealed each 14s with accepted transactions by consensus



https://ropsten.etherscan.io/address/0xa127362d46356632b523cf81fddec1e948d711b0#code

Example apps

- DAO
- ENS
- Gnosys
- Aragon
- Chronobank

Metropolis

- Nicer user experience
- Current way to create ethers is too expansive for earth and centralizes too much the power (PoW), moving to another way (PoS)
- By definition all data is public, introduce a new way to exchange ciphered data between users in a ciphered way (ZKP, zk-snarks)
- RSA signatures

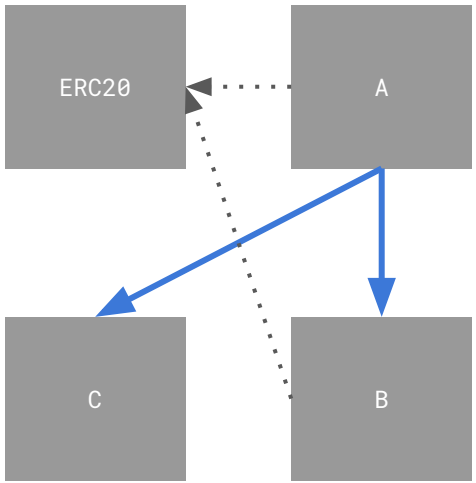
ERC20

standard interface for tokens

https://github.com/ethereum/EIPs/issues/20

```
mapping(address => uint) balances;

function token(address _faucet, uint _amount) {
   balances[_faucet] = _amount;
}

function transfer(address _from, address _to, uint _value){
  balances[_from] -= _value;
  balances[_to]   += _value;
}

function balanceOf(address _owner) returns (uint) {
  return balances[_owner];
}
```

```
function totalSupply() constant returns (uint256 totalSupply)

function balanceOf(address _owner) constant returns (uint256 balance)
function transfer(address _to, uint256 _value) returns (bool success)

function transferFrom(address _from, address _to, uint256 _value) returns (bool success)
function approve(address _spender, uint256 _value) returns (bool success)
function allowance(address _owner, address _spender) constant returns (uint256 remaining)

Contract A {
     function transferAndAuthorize() {
         ERC20 token = 0xdEe06DaC1106C6c6f043783EBD8Fbe6dAd303522
         token.transfer(B.address, token.balanceOf(A.address)-10)
         token.approve(B.address,10)
     }
}
Contract B {
     function sendback() {
         ERC20 token = 0xdEe06DaC1106C6c6f043783EBD8Fbe6dAd303522
         token.transferFrom(A.address,C.address, 10)
     }
}
```



Security, security, security

- code is immutable, so bugs => M$ disaster
- stoppable pattern : if there's any error in the code, activate a flag that "stops" the contract (all functions throws)
- bug bounties
- code review: https://etherscan.io/address/0xa74476443119A942dE498590Fe1f2454d7D4aC0d#code

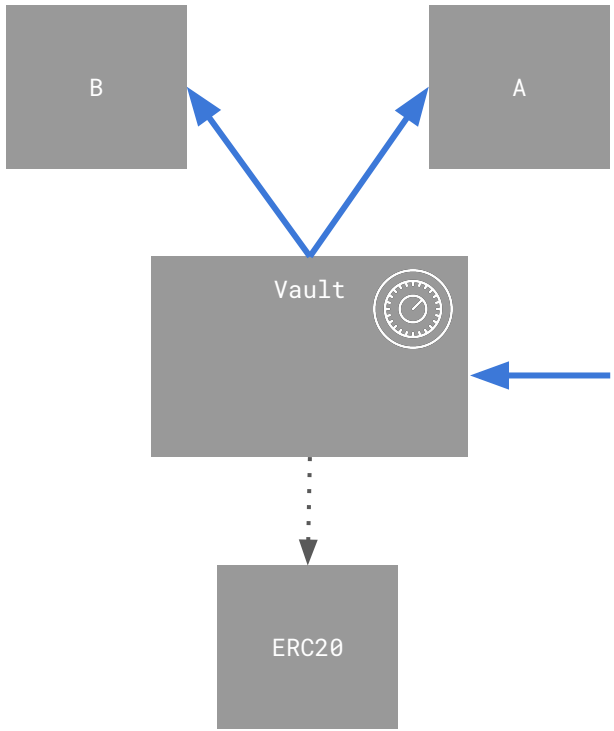
crowdfund your company with those tokens to use the platform later*

https://etherscan.io/tokens

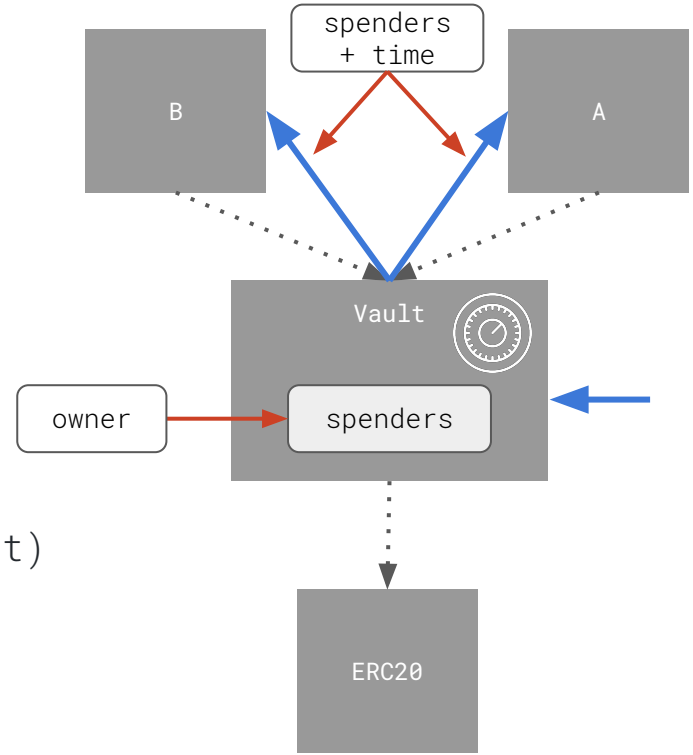
Aragon ICO raised 25M$ in 25m

vault

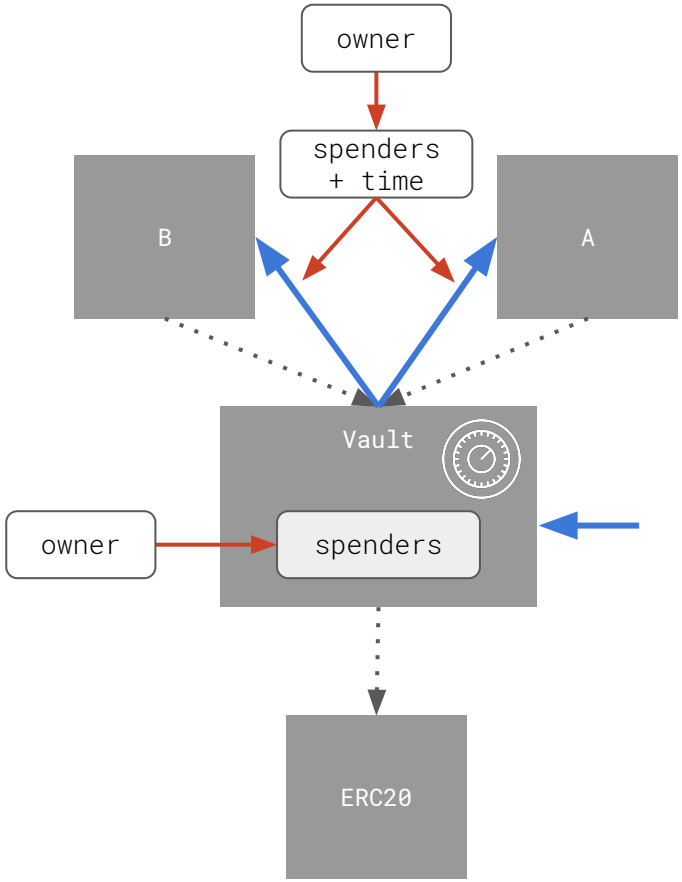
to hold tokens safely and automate payments
to a pre-approved white list of recipients
https://github.com/Giveth/vaultcontract
@jbaylina


B
A
Vault
ERC20

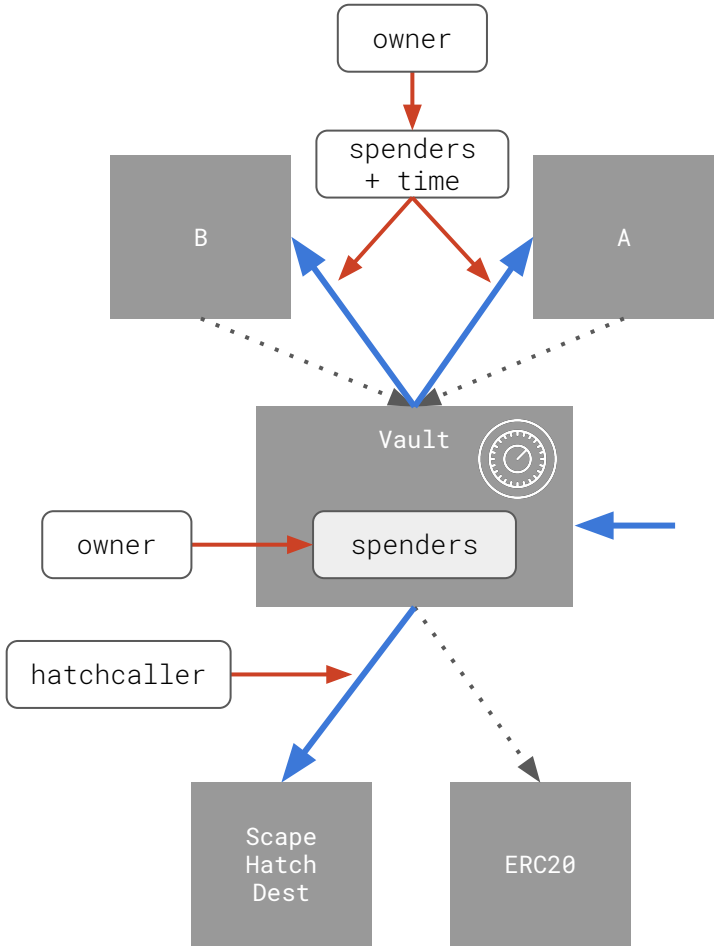
```
function Vault(address _baseToken,...)

function authorizeSpender(address _spender, ...)

function authorizePayment (
    ...,
    address _recipient, uint _amount,
    uint _paymentDelay
) returns (uint paymendId)

function collectAuthorizedPayment(uint _idPayment)
```



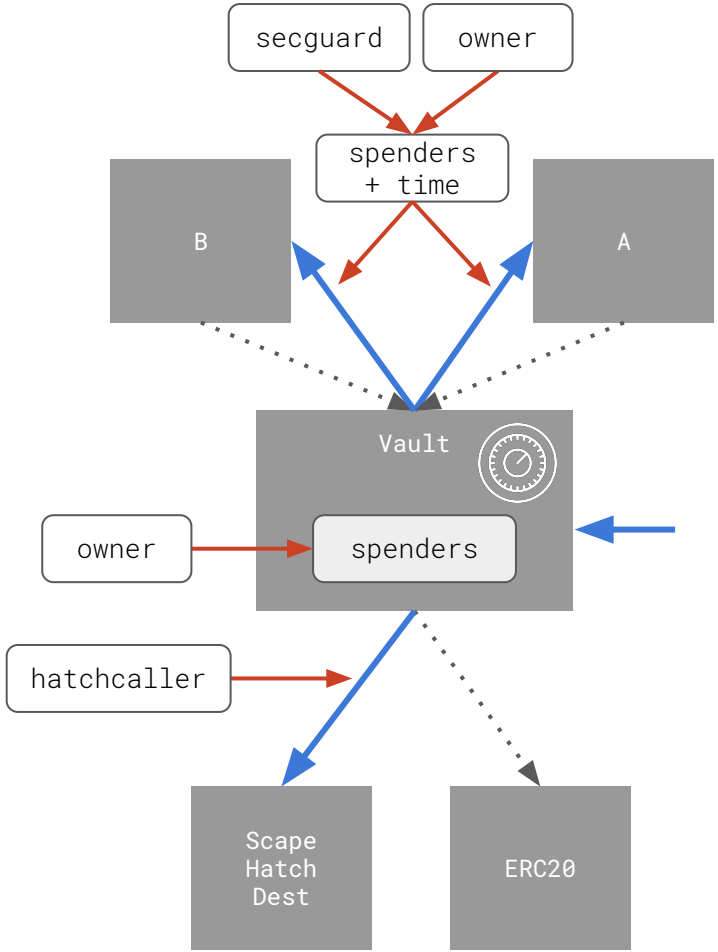
```
function cancelPayment(uint _idPayment)
```



```
function Vault(
  ...
  address scapeHatchCaller,
  address scapeHatchDestination
)

function escapeHatch()

function changeEscapeHatchCaller(
  address _newEscapeHatchCaller
)
```



```
function Vault(...
  address _securityGuard,
)

function delayPayment(
  uint _idPayment,
  uint _delay
)
```

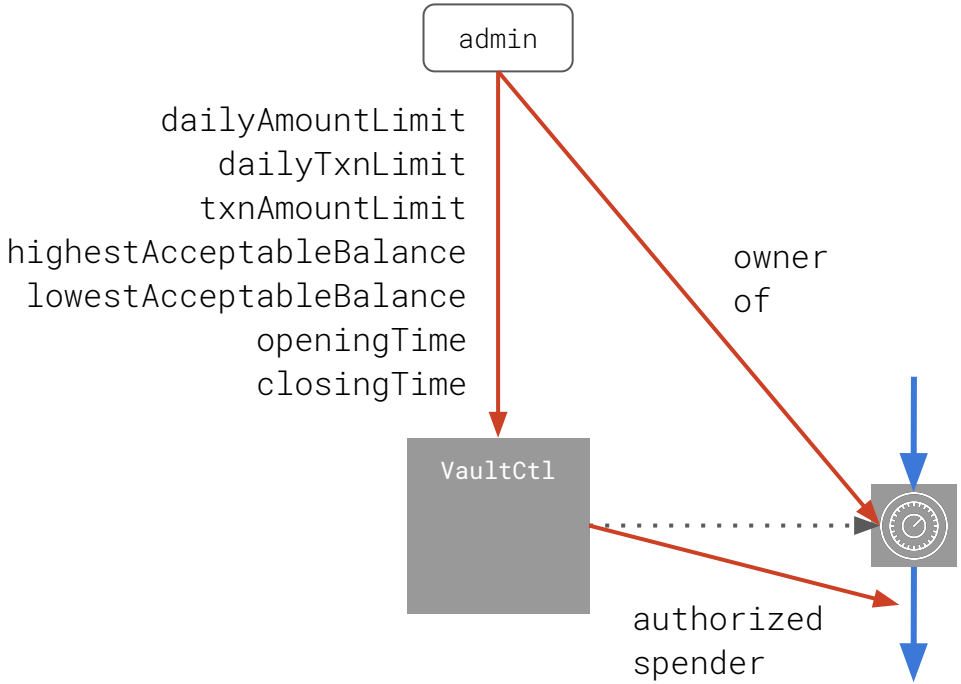


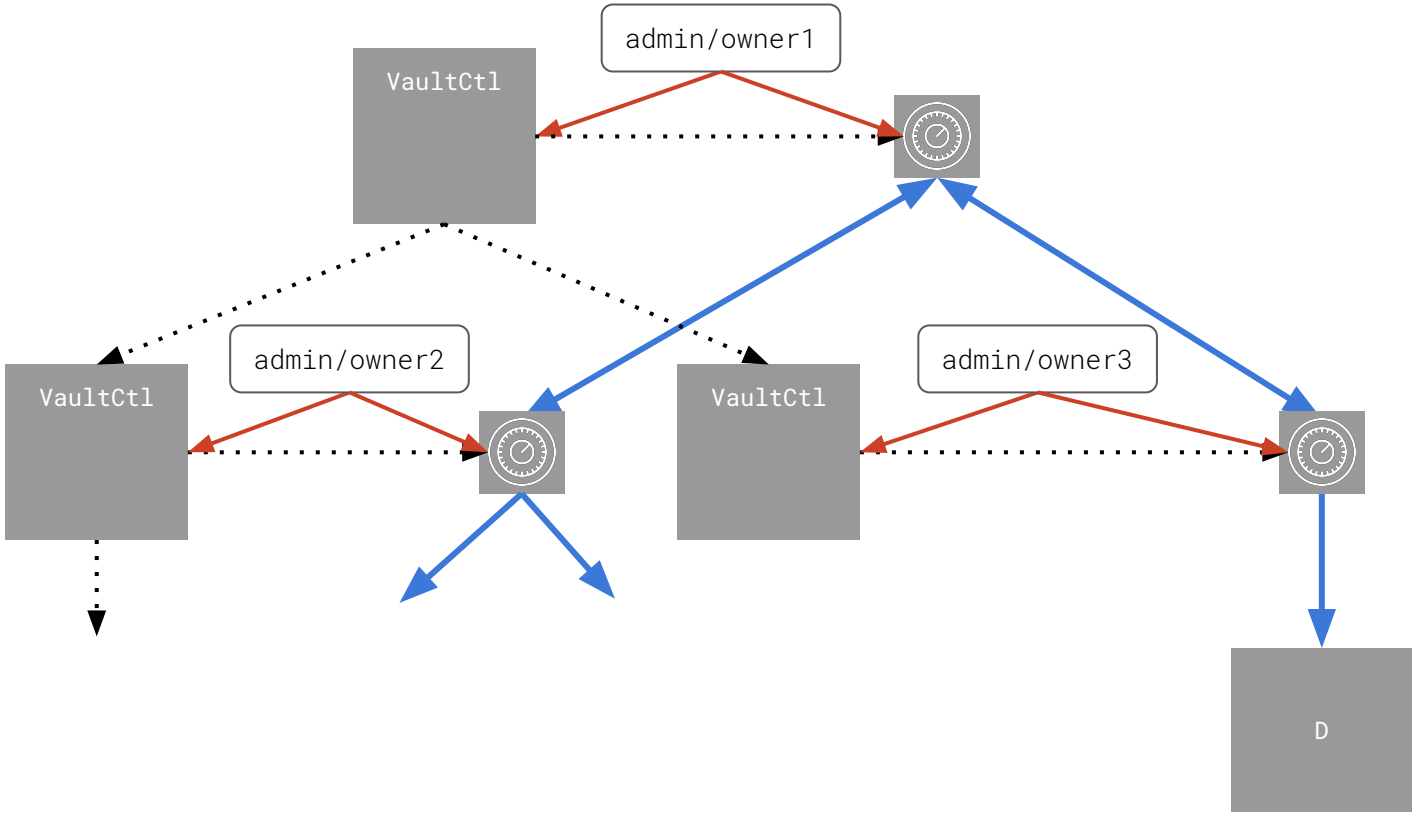
vaultcontroller (WIP)

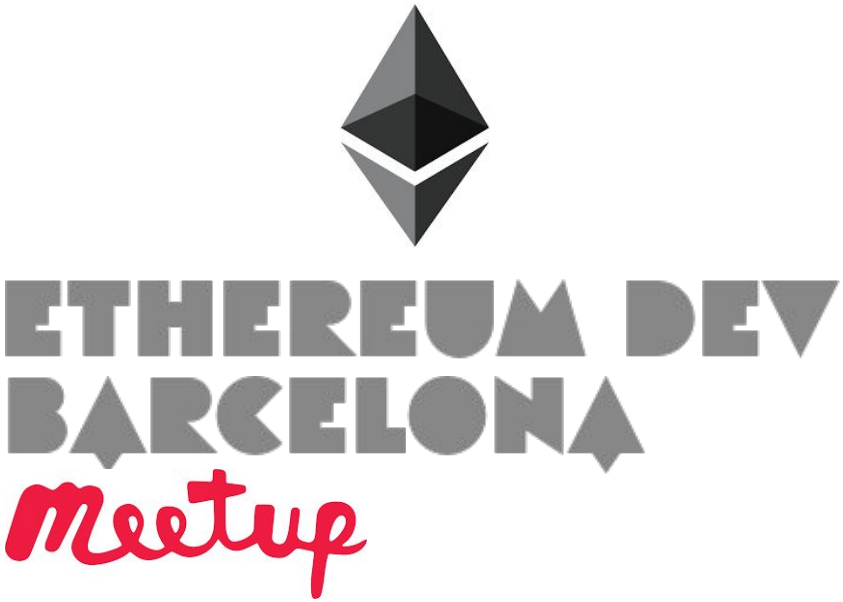
cascade-pouring vaults with limits

https://github.com/Giveth/vaultcontroller

@jbaylina


admin
dailyAmountLimit
dailyTxnLimit
txnAmountLimit
highestAcceptableBalance
lowestAcceptableBalance
openingTime
closingTime
owner
of
VaultCtl
authorized
spender


admin/owner1
VaultCtl
admin/owner2
VaultCtl
VaultCtl
admin/owner3
D



https://www.meetup.com/ethereumbcn/