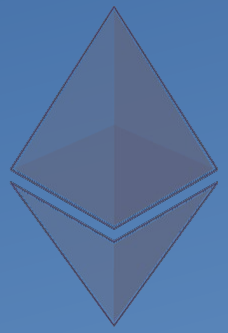
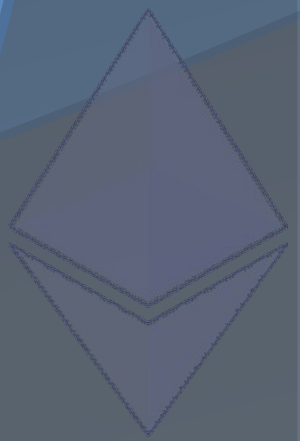
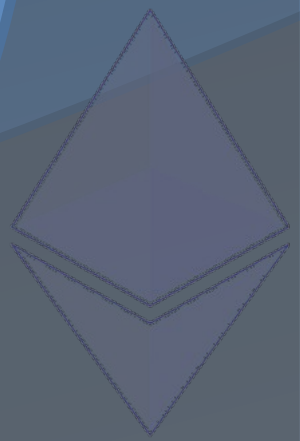
Ethereum Vienna General Introduction





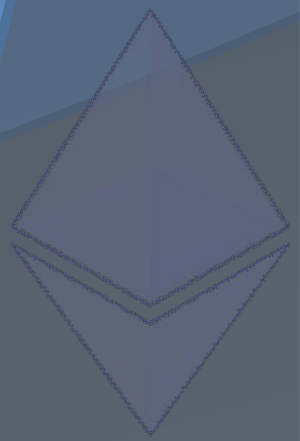
Ethereum Project

- Decentralization of services
- Removing the role of centralized servers
- Control goes from server owner to users
  - Server can't disappear with your data
  - Server can't just randomly modify your data
  - Server can't just freeze your funds
  - Censorship-proof
  - DDOS-resistant



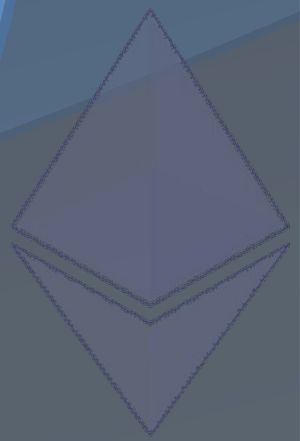
Web 3.0

- Đapps (run in a Web 3.0 client)
  - **Ethereum** (Blockchain)
    - Agreements
    - Relationships
  - **Whisper**
    - Messaging
    - Bulletins
  - **Distributed Content System** (“Swarm”)
    - Data publication and distribution



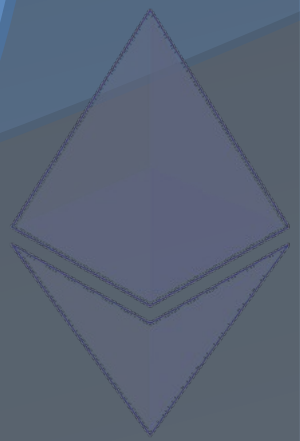
Possible ĐApps

- Escrow (m-of-n transactions)
- Namecoin (decentralized dns)
- Subscription Service
- Crowdfunding
- Subcurrencies
- Decentralized Autonomous Organizations
- Marketplace



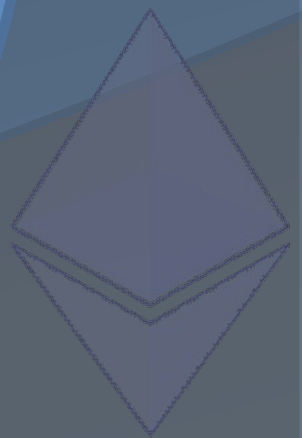
Ethereum Blockchain

- Maintains Accounts with balances denominated in ether/wei
  - **Externally owned** (account)
    - Controlled by a private key
    - Owner can send ether to other accounts
    - Similar to normal bitcoin addresses



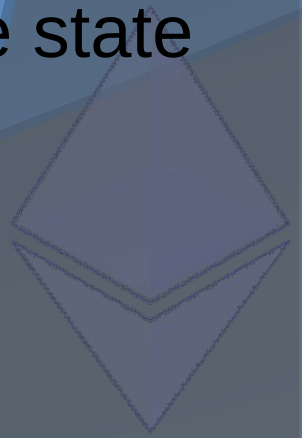
Ethereum Blockchain

- **Internally owned** (contract)
  - Controlled by code
  - Code is executed for each incoming transaction/message
  - No private key, ether can only be sent by the code
  - Has a 256 byte to 256 byte persistent storage
  - Can call other contracts
  - Code written in an ethereum-specific language:
    - **Solidity**: high-level, main language (still in development)
    - **Serpent**: python-like
    - **lll**: low-level



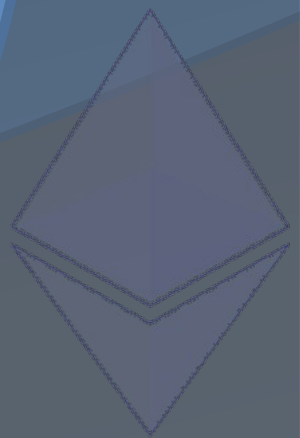
Ethereum Blockchain

- Gas
  - Used for transaction fees
  - Sender “buys” necessary amount of gas at a specified **gasprice** (goes down as price goes up)
  - Every computational step has an associated gas cost
  - Remaining gas is returned to the sender
  - If the sender does not provide enough gas, the state reverts and the miner keeps the ether



Ethereum Blockchain

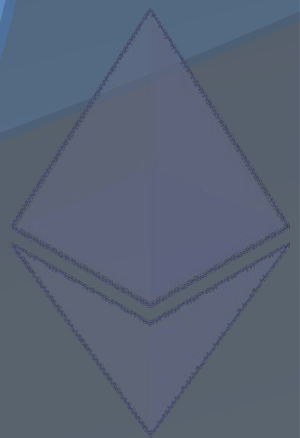
- Gives messages an order
- Messages are grouped together in blocks
- Blocks are chained together
- Longest chain is considered valid
- 12s Block Time (made possible with uncle blocks)
- Hybrid PoW (ASIC-resistant) / PoS (planned)
- Constant Block Reward (dis-inflationary)



Crowdfund

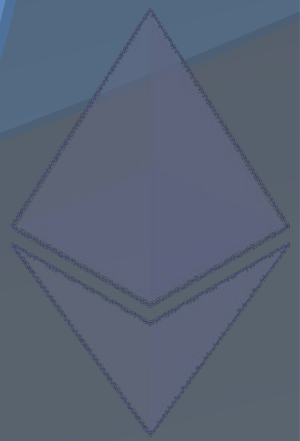
- Keeps track of crowdfunding campaigns
- Automatic payout if goal is reached
- Automatic payback if campaign fails
- 3 functions
  - **create_campaign** <*id*> <*recipient*> <*goal*> <*timelimit*>
  - **contribute** <*id*>
  - **progress_report** <id>

    does not change state, only executed locally



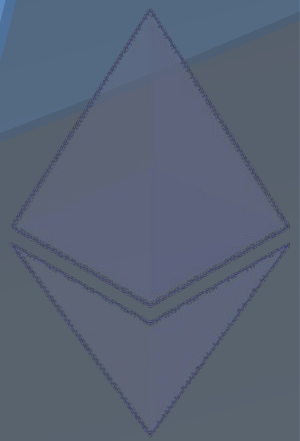
Crowdfund

```
data campaigns[2^80](recipient, goal, deadline, contrib_total, contrib_count,
contribs[2^50](sender, value))

def create_campaign(id, recipient, goal, timelimit):
    if self.campaigns[id].recipient:
        return(0)
    self.campaigns[id].recipient = recipient
    self.campaigns[id].goal = goal
    self.campaigns[id].deadline = block.timestamp + timelimit

def contribute(id):
    # Update contribution total
    total_contributed = self.campaigns[id].contrib_total + msg.value
    self.campaigns[id].contrib_total = total_contributed

    # Record new contribution
    sub_index = self.campaigns[id].contrib_count
    self.campaigns[id].contribs[sub_index].sender = msg.sender
    self.campaigns[id].contribs[sub_index].value = msg.value
    self.campaigns[id].contrib_count = sub_index + 1

    # Enough funding?
    if total_contributed >= self.campaigns[id].goal:
        send(self.campaigns[id].recipient, total_contributed)
        self.clear(id)
        Return(1)
...
```



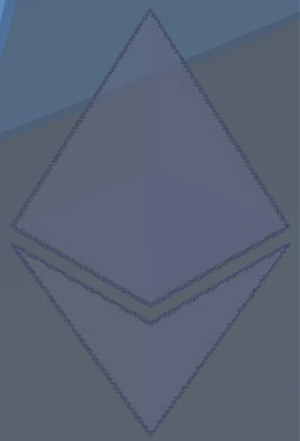
Who?

- Ethereum Stiftung
  - Allocates resources
- ethereum Switzerland GmbH
  - Responsible for genesis-block-related tasks
- ÐΞV
  - Nonprofit
  - Building and promoting Ethereum 1.0



Ether Sale

- Development funded via crowdfunding
- 31,529 BTC (~12.5m USD)
- Over 9000 transactions
- 2nd biggest crowdfunder

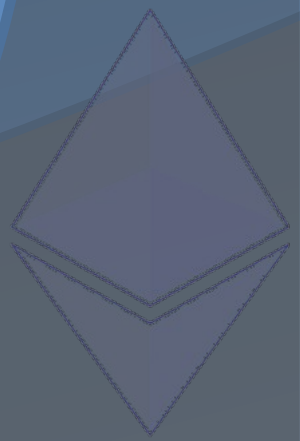


Who?

- Vitalik Buterin
  - Invented the concept of ethereum
  - Co-Founder / Writer of Bitcoin Magazine in 2011
  - 2014 World Technology Award (IT Software)
  - Thiel Award

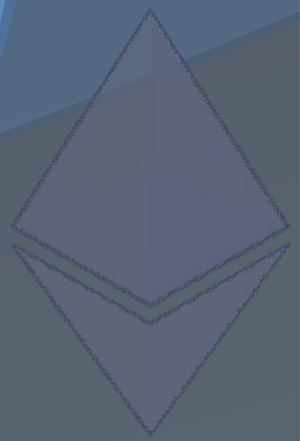
Whisper

- Decentralized Messaging
- Messages are assigned a topic
- Private messages encrypted
- Public broadcasts
- Dark (no reliable tracing mechanism)
- Not designed for RTC

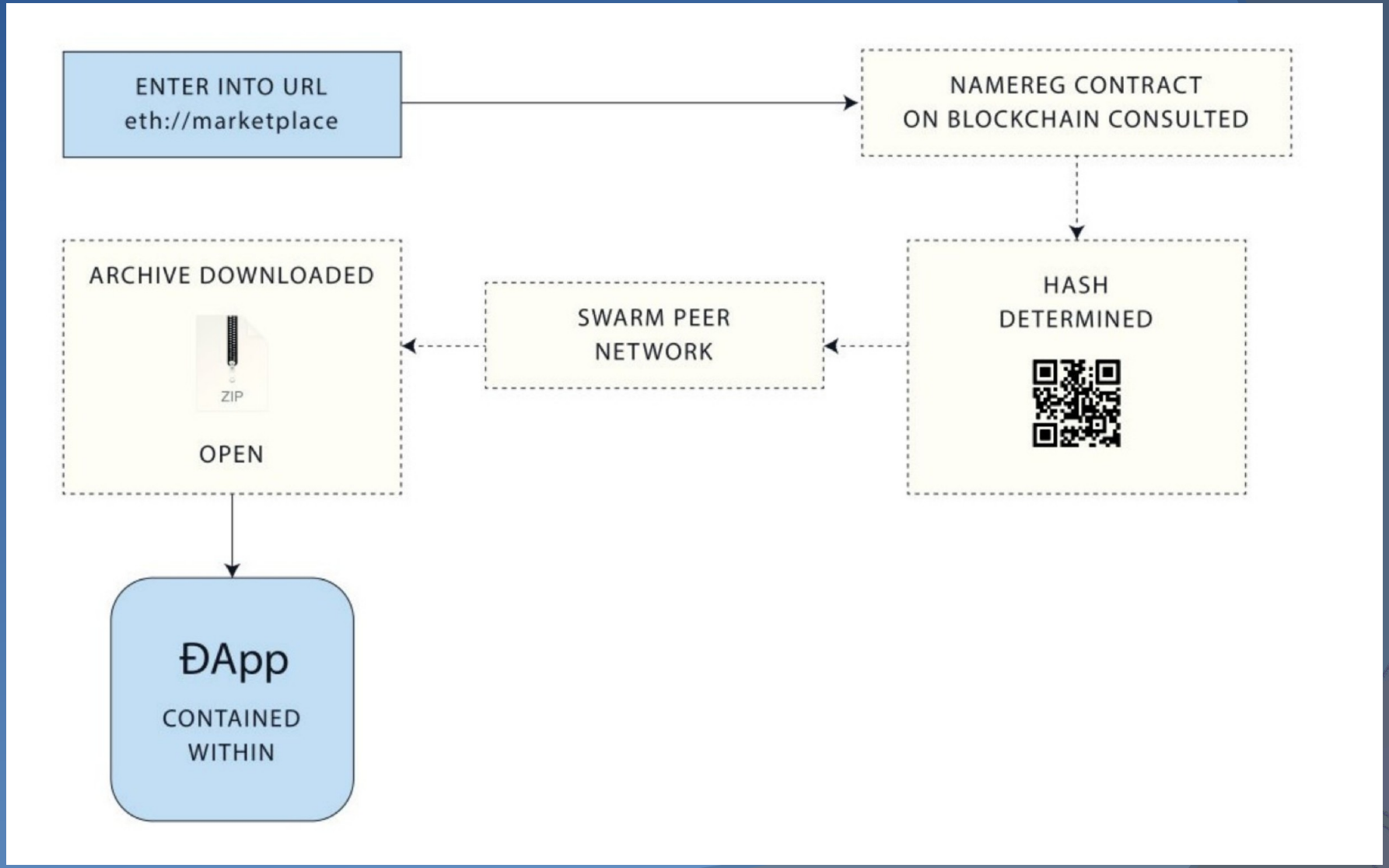


Distributed Content System

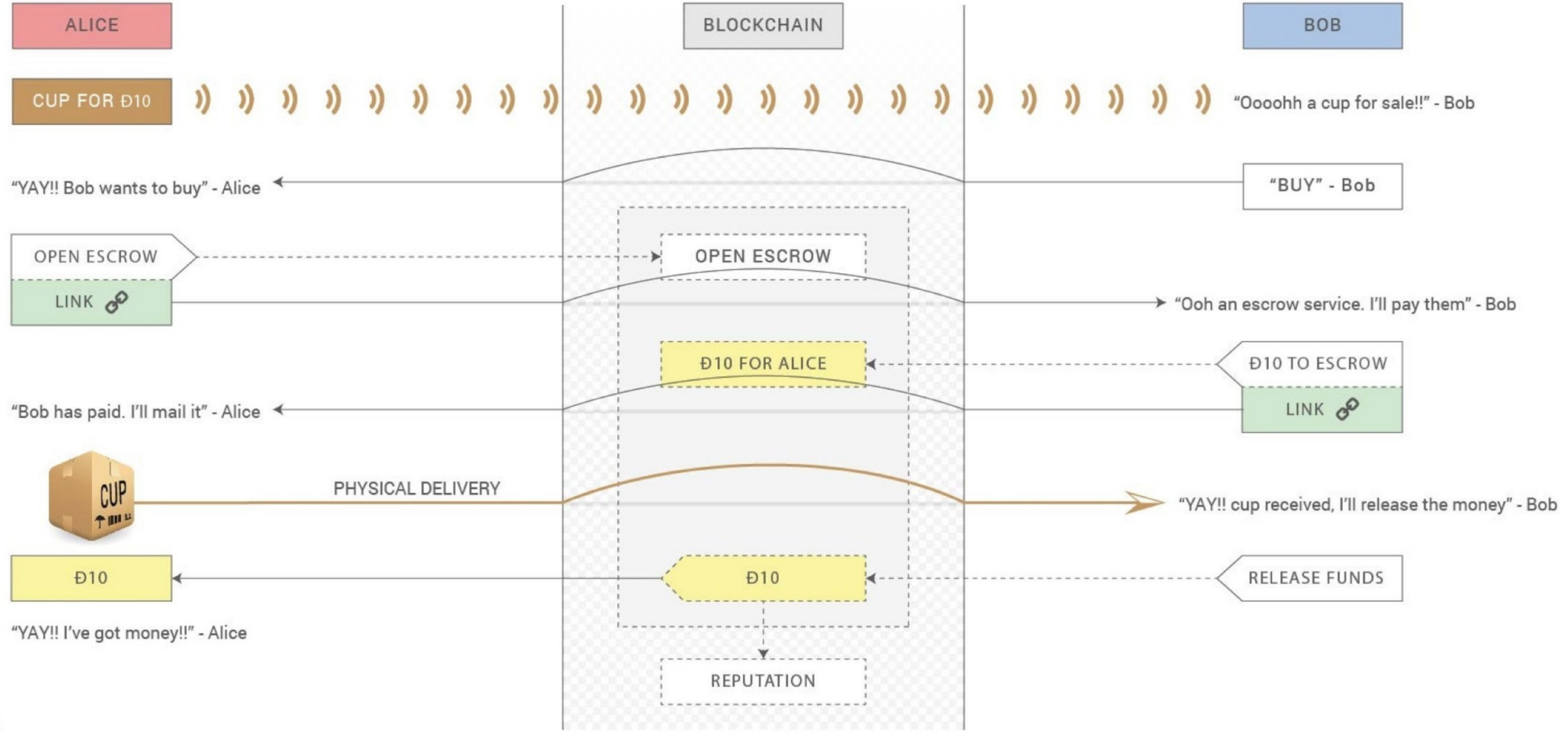
- Not yet chosen. Needs those properties:
  - Reverse Hash Table
  - Like bittorrent with magnet links
  - Private
  - Low-latency
  - Incentivised (content can get lost if no one pays maintenance)



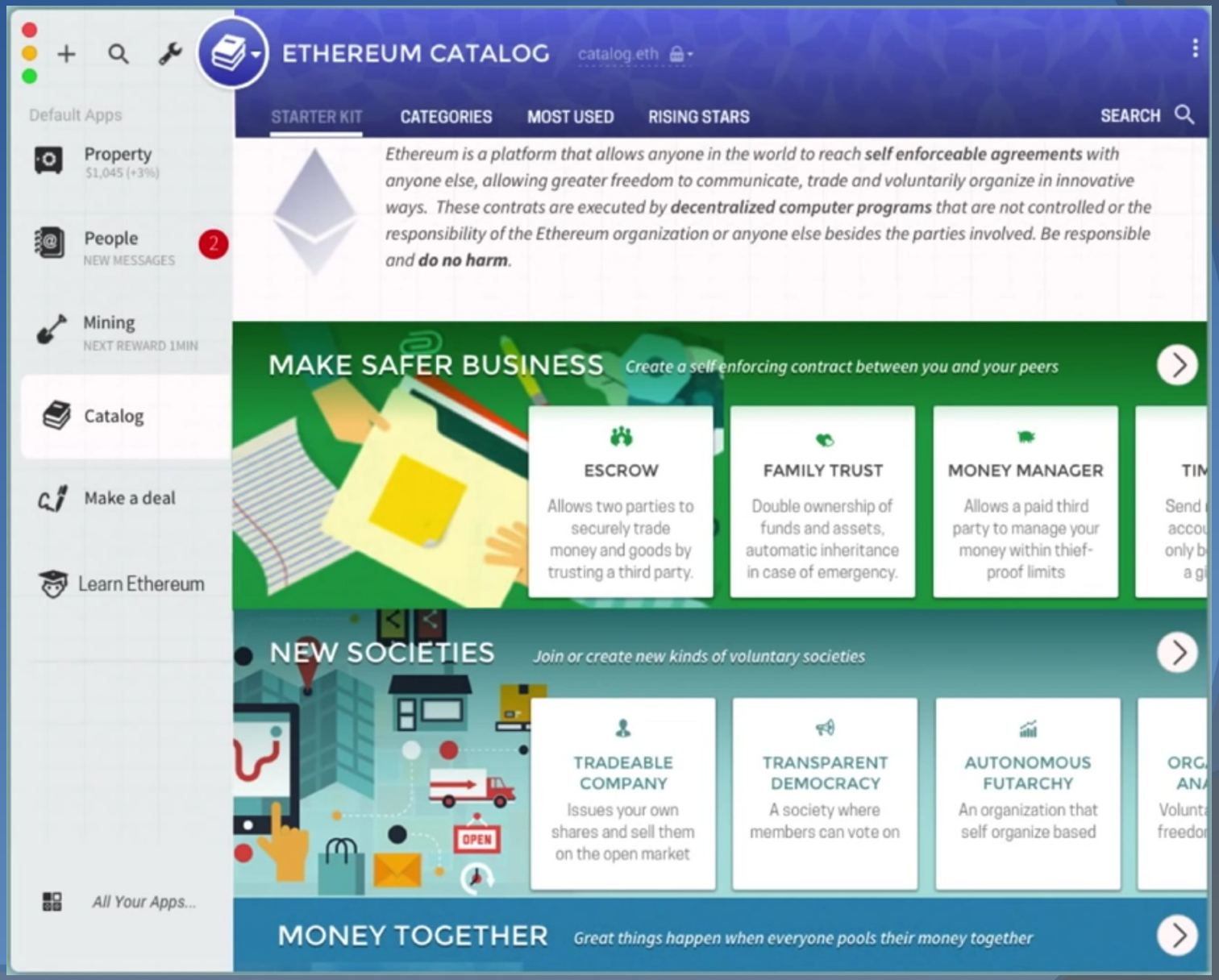
Marketplace



Marketplace



Mist (Web 3.0 Client)



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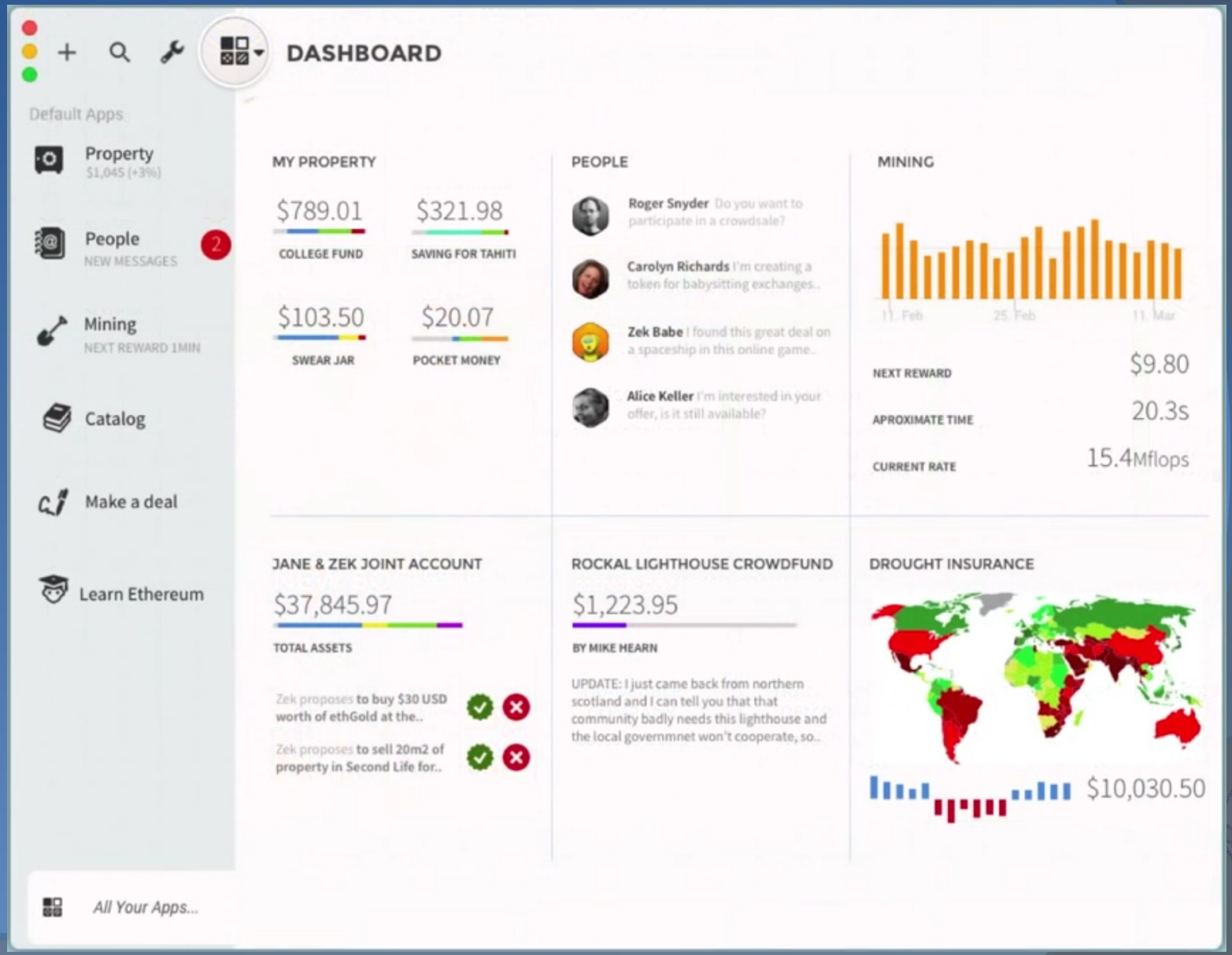

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