

An aerial photograph of a coastline, likely in the Caribbean, showing a sandy beach, turquoise water, and a small island or peninsula in the distance. The water is a deep blue-green color, and the beach is a light tan color. The overall scene is serene and tropical.

trustlines

network

The global platform which enables permissionless
mobile payments based on people powered money

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RECAP

Adoption of Cryptocurrency for Payments

Promise: Permissionless, decentralized payments

Reality: Both a bank and exchange account are needed in the first place

Impact: Not useable by those who'd benefit the most, the unbanked

THE ORIGINAL RIPPLE IDEA

The Original Ripple Idea

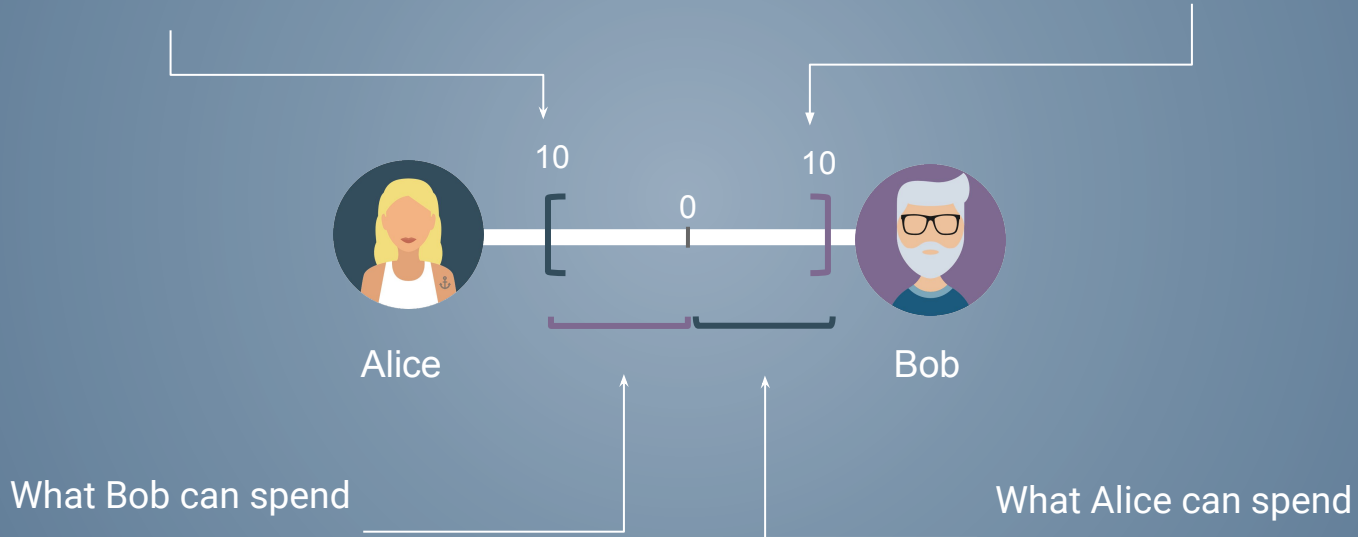


Global payments based on a network of individual **trust** relationships

A Trustline

Credit limit
Bob has with Alice

Credit limit
Alice has with Bob

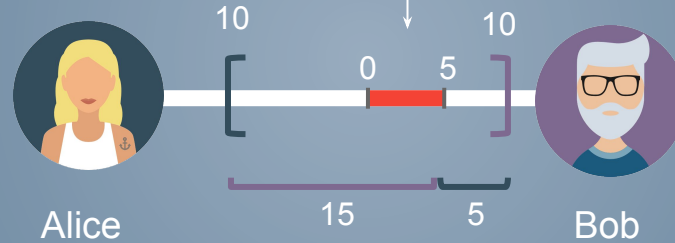


A Trustline With a Balance

After Alice paid Bob \$5

The (Im)Balance

- What Alice owns Bob
- An IOU in the real world
- The money created!



What Bob can spend
(now \$5 more)

What Alice can spend
(now \$5 less)

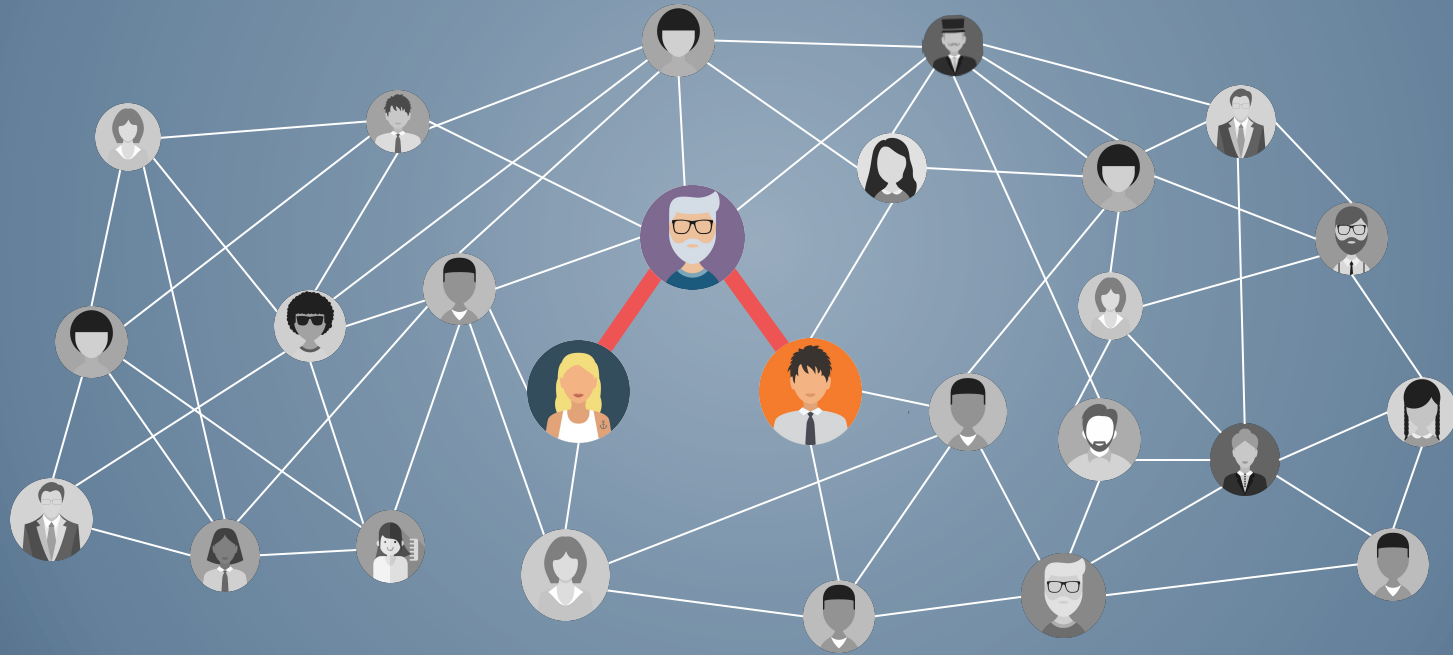
Payments Between Strangers

Challenge:

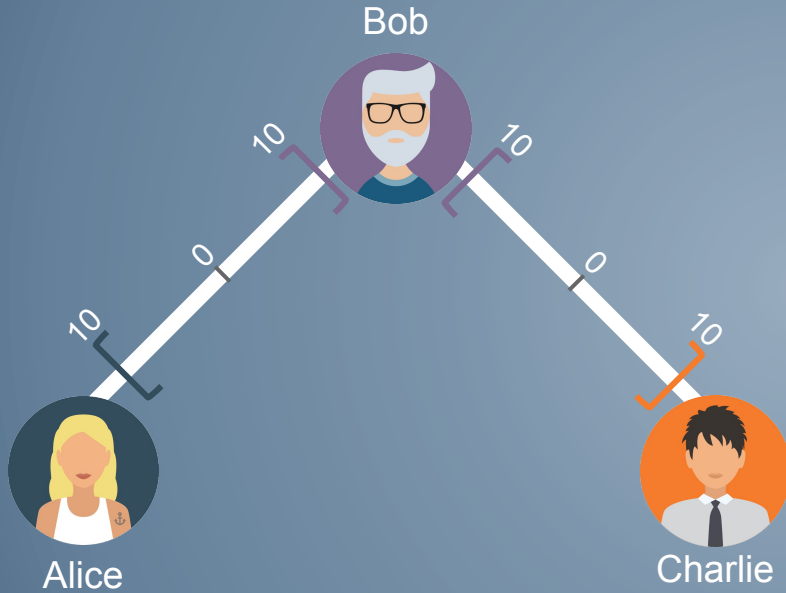
- Alice wants to pay Charlie
- They do **not** know or trust each other



Payments Between Strangers II

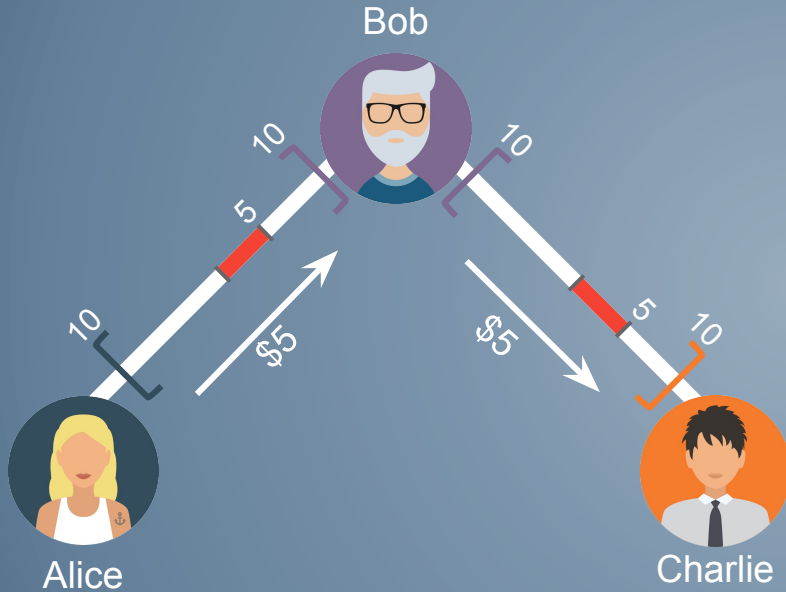


Payments Between Strangers III



- There is a path from Alice to Charlie via Bob

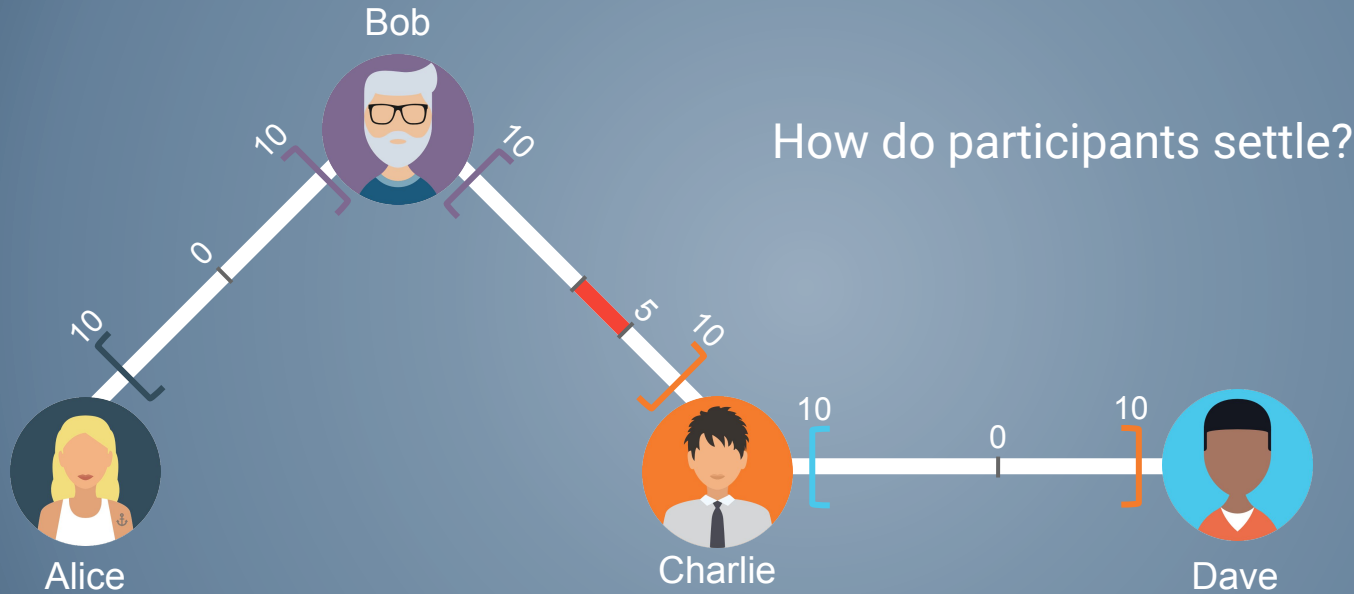
Payments Between Strangers IV



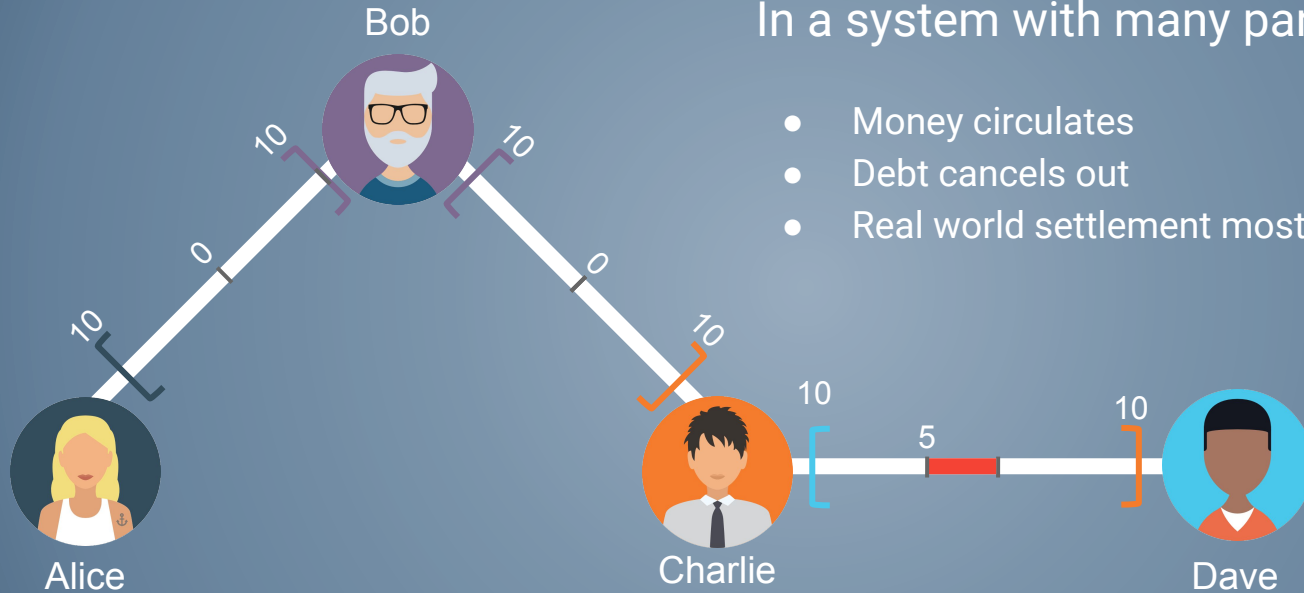
Balance Updates:

- Alice -\$5
- Bob +\$5
- Bob -\$5
- Charlie +\$5

Debt Cancellation



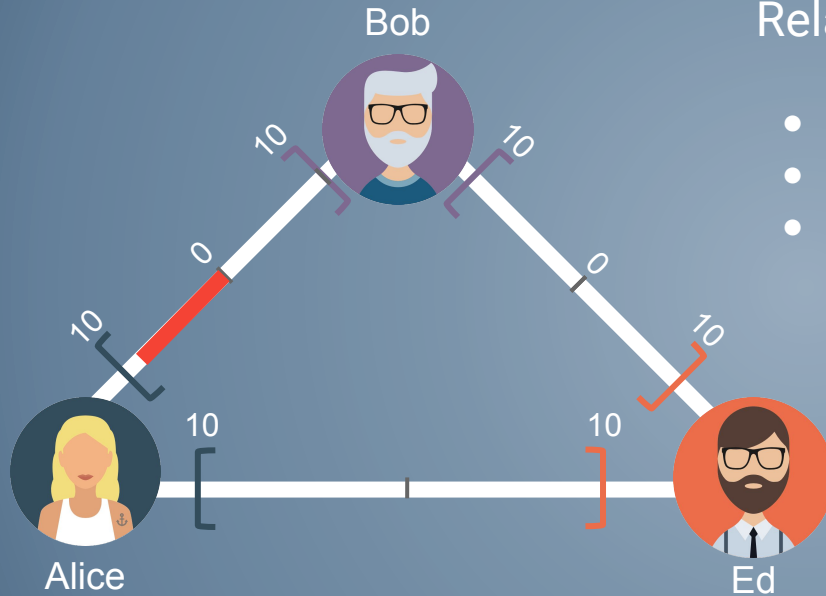
Debt Cancellation II



In a system with many participants

- Money circulates
- Debt cancels out
- Real world settlement mostly not necessary

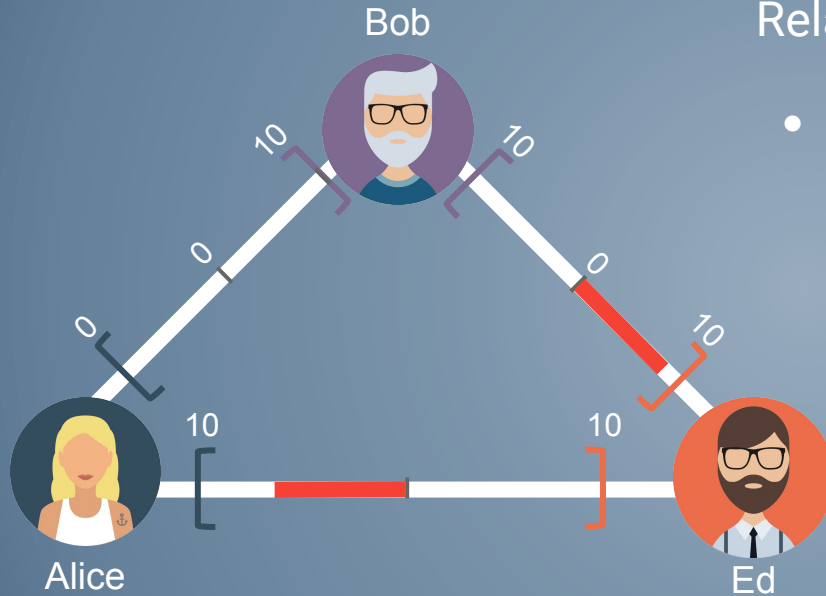
Closing a Trustline



Relationships can change

- Alice doesn't like Bob anymore
- But Bob is indebted to her
- Alice wants to close the credit line

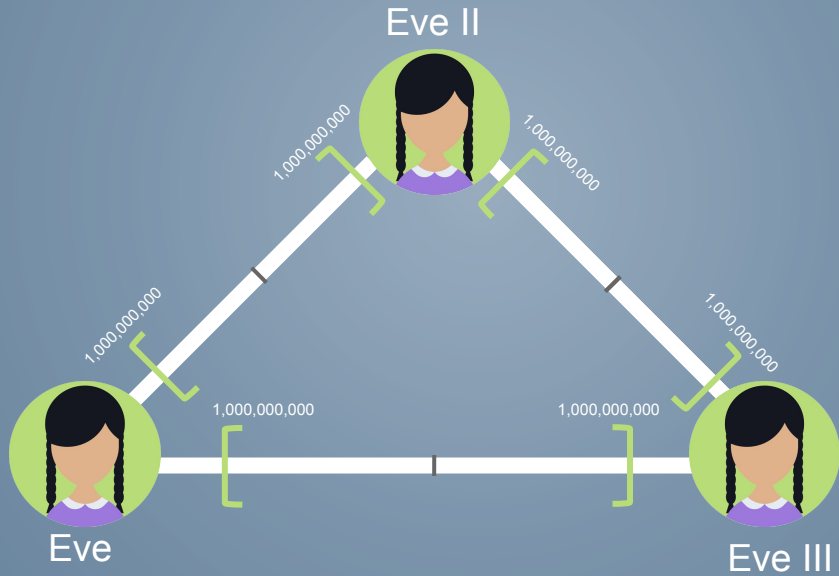
Closing a Trustline II



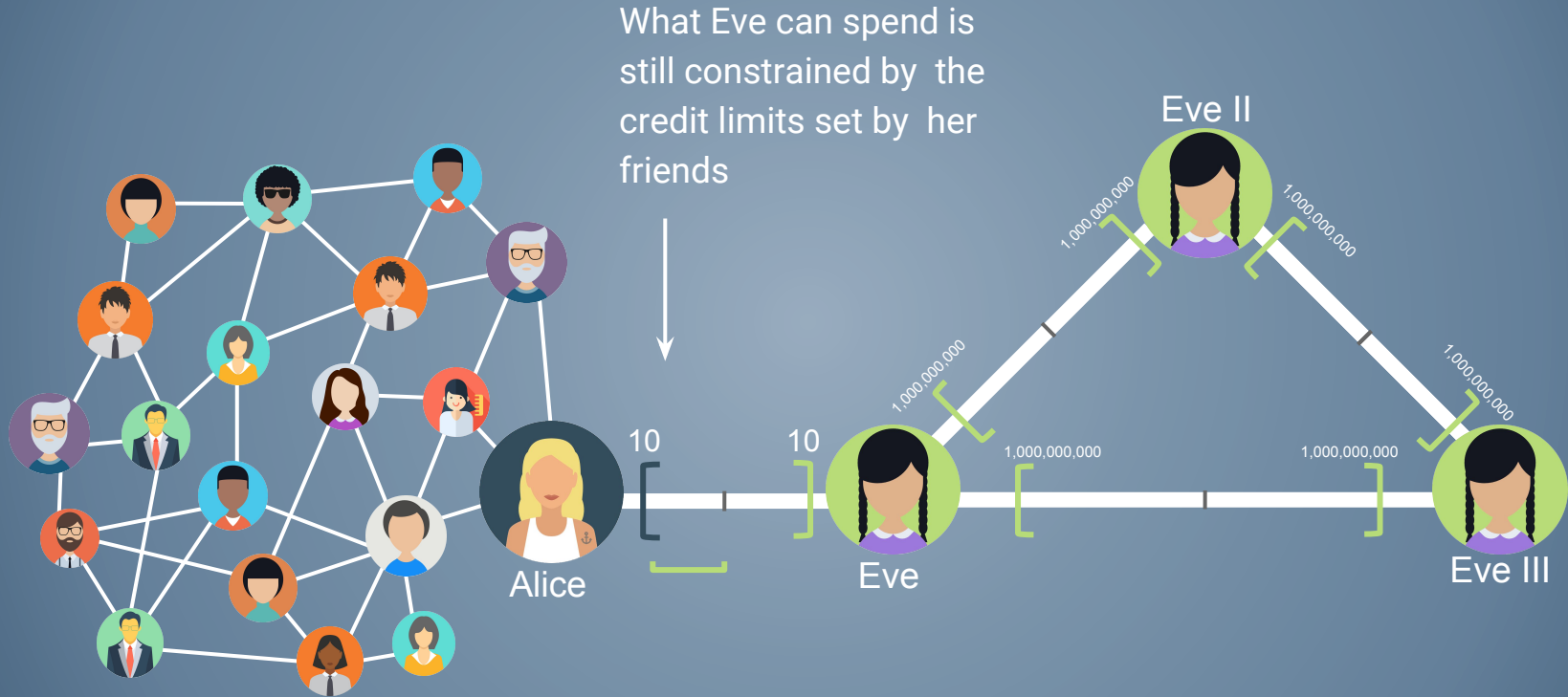
Relationships can change

- Payments to “self” allow to control debt relations and close or reduce credit lines

Sybil Attacks



Sybil Attacks II



The Original Ripple Idea



That's how global payments based on a network of individual **trust** relationships work!

Is This Money?

“Money is an agreement within a community to use something standardized as a medium of exchange”

Bernard Lietaer

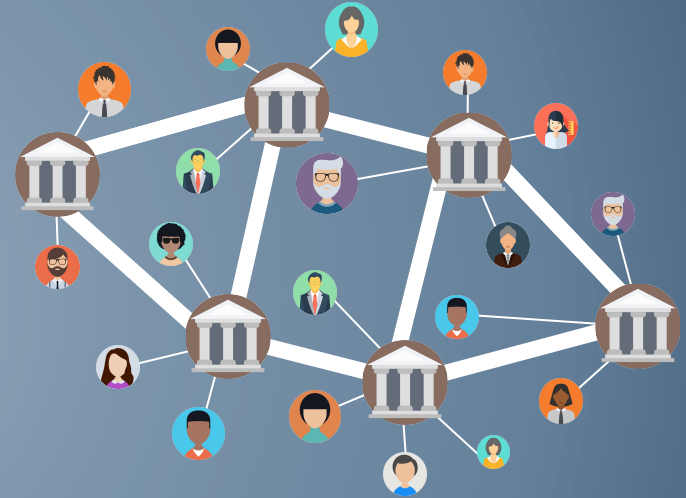
Is This Money? II

- Unit of Account?
- Medium of Exchange?
- Store of Value?



Money as debt:

Of the two types of broad money, bank deposits make up the vast majority – 97% of the amount currently in circulation. And in the modern economy, those bank deposits are mostly created by commercial banks themselves.



Bill Gates

**BANKING IS
NECESSARY.**

**BANKS ARE
NOT.**



FAQ

- How does money get in and out of the system?
 - Not necessary. Cash deposits & withdrawals possible though
- What is money in the system?
 - Imbalances which are real world IOUs
- How secure is it?
 - It's as secure as lending money to your friends
- What happened to the idea?
 - Good question!

THE TRUSTLINES NETWORK

A solid red horizontal bar is positioned to the right of the text, extending across the width of the slide.

The Trustlines Network



A decentralized platform for customizable,
interoperable complementary currencies

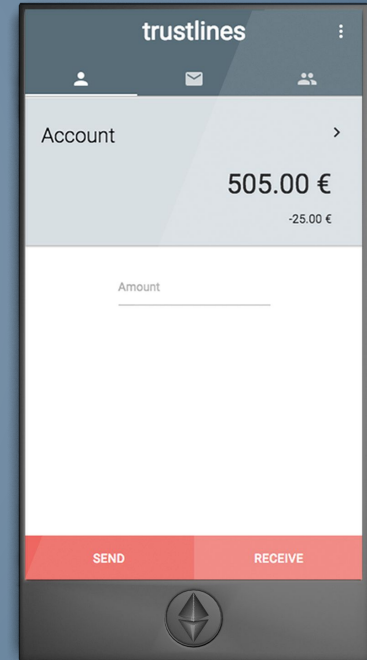
A mobile payment application
with a focus on ease of adoption

The Mobile App

- No registration, no ID required
- No bank account or credit card required
- No money deposit required
- No ETH required

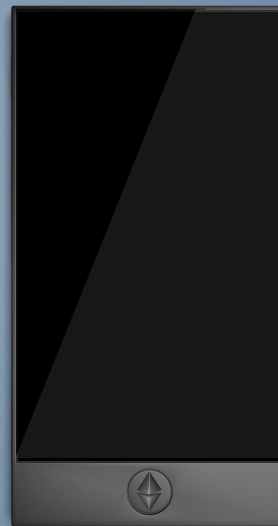
Nonetheless, start doing payments within a minute.

That's unique!



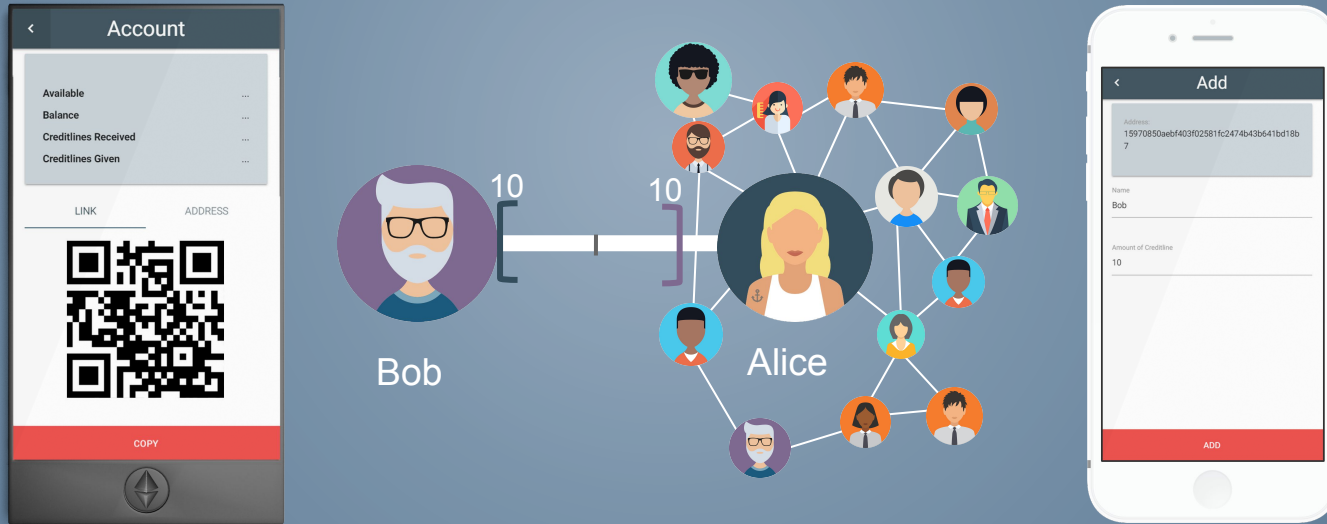
The Mobile App - Onboarding

1. Download the app

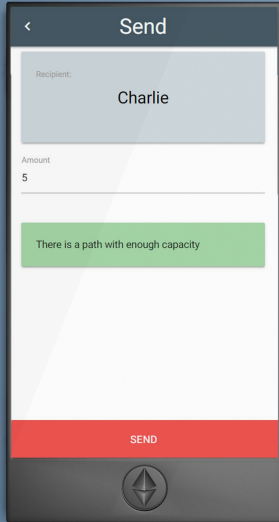


The Mobile App - Onboarding II

2. Join by creating a trustline with a friend



3. Start sending and receiving payments

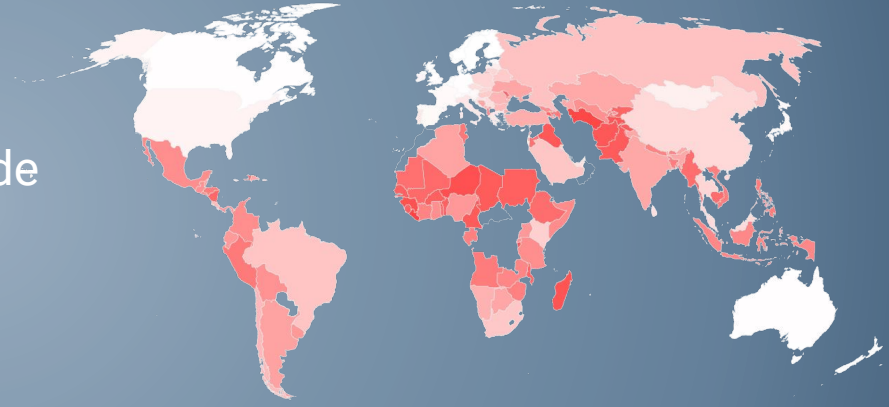


APPLICATIONS



Mobile Payments for the Unbanked

- 2B unbanked or underbanked worldwide
- Banks cannot make a profit
- High smartphone penetration



Source: Worldbank
© 2004 for MSFT, Google, Microsoft, Nokia, Wikipedia

Significant adoption potential for the Trustlines Network
based on its low barriers of entry!

P2P Fiat to Crypto Exchange

Challenge:

- Alice wants to buy ETH
- Dave wants to sell ETH
- They do **not** know or trust each other



Alice



Dave

P2P Fiat to Crypto Exchange II

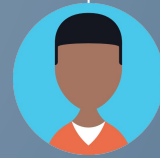


Alice

DEX

Offer by Dave:

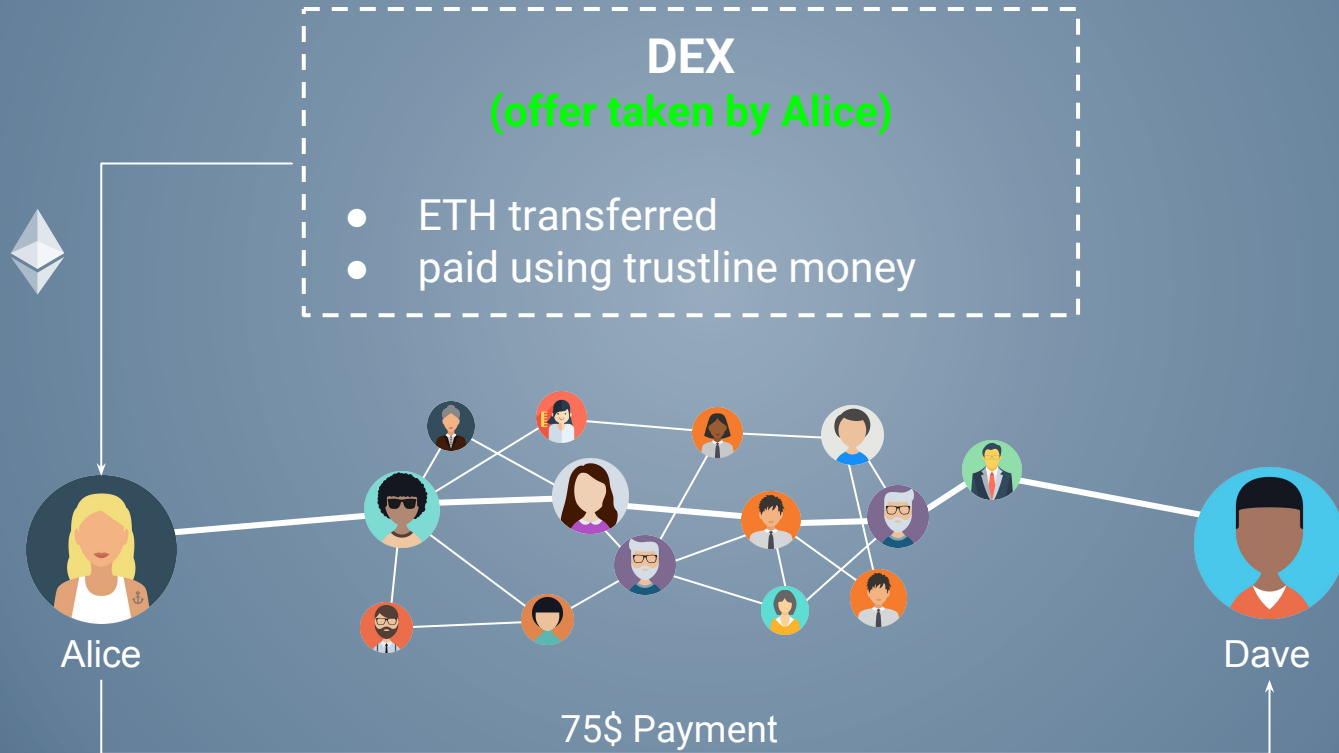
- ASK: 3 ETH @ USD 25 each



Dave



P2P Fiat to Crypto Exchange III



P2P Fiat to Crypto Exchange IV

Solves:

- Dependence on centralized exchanges
- Requirement to have a bank account
- Requirement to meet in the real world

Requires:

- Sufficient number of users willing to sell ETH

P2P Fiat to Crypto Exchange V

Bonus:

- Allows to buy ETH to pay for gas
 - Automatically when joining the system!
- ETH can be exchanged to any other crypto token
- ETH can be used to interact with any DApp

Download the app, connect with a friend,
get **access to the whole Ethereum ecosystem!**

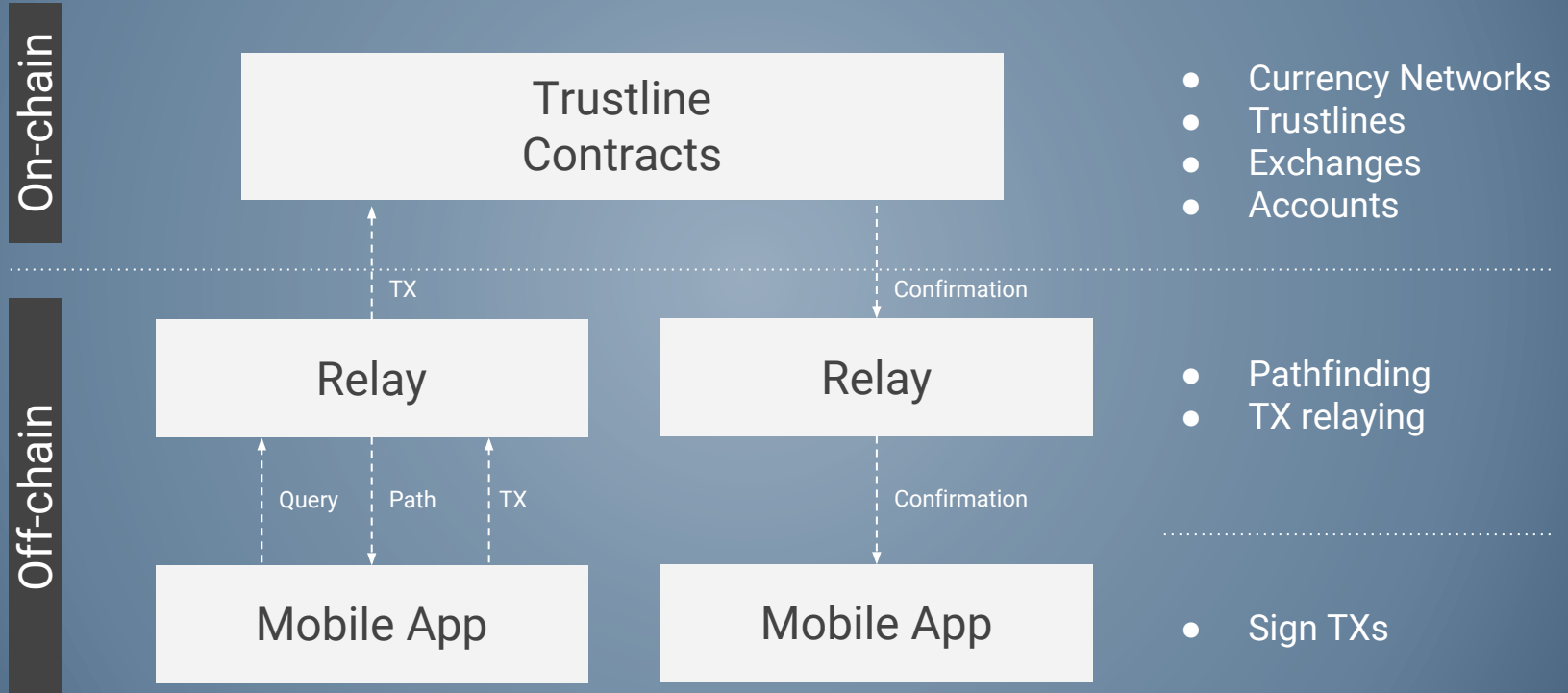
Other Applications

- Expense splitting
- Loans
- Saving
- Crowdfunding
- Insurance

TECHNICAL IMPLEMENTATION

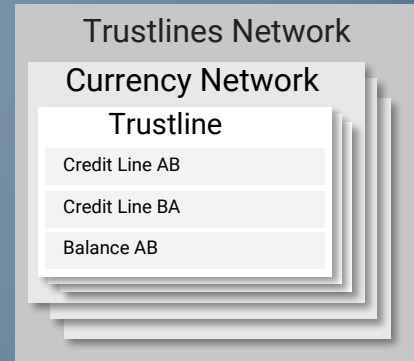


Architecture

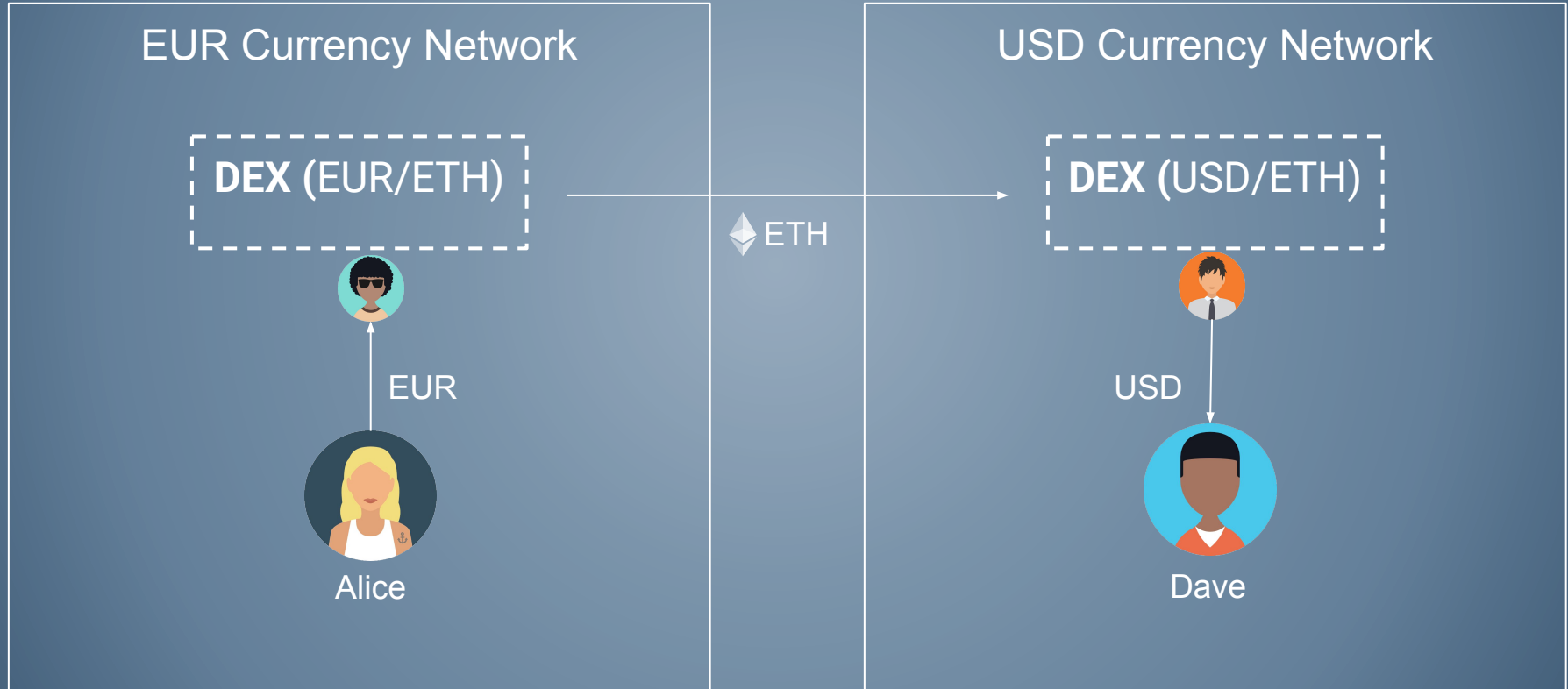


Currency Networks

- Platform supports multiple interoperable Currency Networks
- A Currency Network is defined by its
 - denomination (EUR, GLD, BTC, Beers, Time, ...)
 - user group (open, closed/permissioned)
 - customizations (rules on interest, credit lines)
 - trustlines between its participants and their properties



Cross Currency Payments



The Core Contract

- Manages all accounts within one currency network
- Fitting them into the 32 bytes EVM word size

```
27     struct Account {
28         // A < B (A is the lower address)
29         uint16 interestAB;    // interest rate set by A for debt of B
30         uint16 interestBA;    // interest rate set by B for debt of A
31
32         uint16 mtime;         // last modification time
33
34         uint16 feesOutstandingA;    // fees outstanding by A
35         uint16 feesOutstandingB;    // fees outstanding by B
36
37         uint32 creditlineAB;    // creditline given by A to B, always positive
38         uint32 creditlineBA;    // creditline given by B to A, always positive
39
40         int48 balanceAB;        // netted balance, value B owes to A (if positive)
41     }
```

Interoperability

- ERC20 compatibility
 - `balanceOf` - gives the spendable amount
 - `transfer` - requires pre-registered path
 - `approve` etc.- work as expected
- Governance Hooks for advanced applications
 - credit limits
 - interest rates

Fees (payable in ETH)

- Relay fee (micropayments)
- Gas

Fees (payable in trustline money)

- Capacity Fee
- Imbalance Fee
- Interest

Pathfinding (optimize for low fees)

- sufficient capacity
- shortest path (save gas)
- try to cancel debt or minimize the total added imbalances
- When adding imbalances then in paths with lowest interest rate

Goal: Incentivise providing transfer capacity and having a balanced network

Scaling the System

Scaling the user base

- Early majority fascinated by blockchain technology
- Complementary Currency communities
- Venezuela, Iceland, Zimbabwe, India, ...
- Referral reward mechanism

Scaling the Technology

- Ethereum sharding
- Raiden Network

the stuff we are working on anyway

Goal: Scale to 123.45M users by Q2/2021

RECAP



Recap

An old but **powerful idea** implemented on **Ethereum** with a **unique onboarding experience** that has the potential to drive **significant adoption** of blockchains, aiming to **deliver the promise** of **scalable** decentralized, permissionless, global **payments** based on **people powered money**

Project Status

- In development at brainbot technologies
- Working prototype

Getting in touch:

- <http://trustlines.network/>
- Read our whitepaper
- Join our Slack
- Join our development team





trustlines

network

Thank You!