Stablecoins and Payments

Introduction to Celo and Mobile-based Blockchain Payments

UC Davis ECS 189F Course
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Developer Relations

Conducts Technological Symphonies

Interest, Hobbies
- Mediterranean culture
- STEM and Humanities
- Board games
Agenda

1. Introduction to Stablecoins
2. Introduction to Celo
3. Stability Protocol Overview
4. Consensus
5. Mobile-first
6. Comparison to Other Networks
7. Case Studies
8. Q&A
Introduction to Stablecoins
What is a Stablecoin?

1. Cryptocurrency
2. Minimizes Volatility
3. Pegged to Asset
Examples of Stablecoins

1. Tether (USDT)
2. USDC
3. DAI
4. cUSD (Celo Dollars)
Rise of Tether

- Launched in 2014
- For every USDT minted, Tether Foundation keeps $1 USD in reserve
Rise of Tether (Continued)

Source: The Rise of Stablecoins, Coinmetrics
Tether Alternatives

1. USDC (Circle + Coinbase)
2. GUSD (Gemini Dollars)
MakerDAO

- DAI is the native Asset
- Pegged to USD
- Backed By ETH
- Decentralized
Celo Dollar

- Native Stablecoin Asset on Celo
- Pegged to USD
March 2020 Effect

Source: The Rise of Stablecoins, Coinmetrics
Introduction to Celo
Build a monetary system that creates conditions of prosperity for all.
Celo Architecture Overview

- Mobile-first Blockchain
- Proof-of-Stake
- EVM-based Network
Address-based Encryption

- Variant on identity-based encryption
- Register address-> public key in smart contract
- Perform attestation randomly on registrant
- Can work with phone numbers, emails, 2FA
1. Request Attestations
2. Randomly selected Validators
3. Reveal Phone Number to Issuer
4. Send signed attestation via SMS message
5. Complete Attestation with the signed attestation message
Reputation Scoring

- EigenTrust to score reputation based on phone contacts.
- Privacy-preserving through ZKProof.
Stability Protocol Overview
Types of Stablecoins

1. Fiat collateralized
2. Crypto collateralized
3. Seigniorage style
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The Reserve

- Holds CELO and a diversified basket of non-Celo crypto assets
- Rebalanced periodically
- Used to stabilize issued Celo stablecoins (e.g. Celo Dollars)
- Mechanisms for increasing reserve ratio
  - Variable transfer fee on CELO
  - Epoch rewards
  - Stability fee
Expansions & Contractions

- Decentralized One-To-One Mechanism (DOTO)
  - Users can create new Celo Dollars by sending 1 US Dollar worth of CELO to a decentralized exchange.
  - Users can burn Celo Dollars by redeeming them for 1 US Dollar worth of CELO.
  - Creates incentives for contraction and expansion cycles.
Expansions & Contractions

- Decentralized One-To-One Mechanism (DOTO)
  - Users can create new Celo Dollars by sending 1 US Dollar worth of Celo Gold to a decentralized exchange.
  - Users can burn Celo Dollars by redeeming them for 1 US Dollar worth of Celo Gold.
  - Creates incentives for contraction and expansion cycles.
- Constant-Product Decentralized One-To-One Mechanism (CP-DOTO)
  - Mitigates the depletion potential of the DOTO Mechanism
  - Uses a constant-product market-maker model inspired by the Uniswap system to dynamically adjust on-chain price
Consensus
Proof of Stake
Istanbul Byzantine Fault Tolerance Consensus
Node Discovery

1. Discovery v4
2. Modified to look at NetworkID
Validating

1. 100 Validator Cap
2. 1 Day Epochs
3. Validator Groups
4. Webinar
Mobile-First
Mobile-first Blockchain

1. More mobile users globally
2. Better UX/UI
3. Emerging Markets
Valora

Visit valorapp.com
Comparison to Other Networks
Differences to Polkadot

1. Para and relay chains.
2. Parachain slots.
3. Communications between parachains.
4. GRANDPA consensus
Differences to Cosmos

1. Unified API for Hubs.
2. Permissionless Hubs
3. Inter-blockchain comms
4. ABCI spec
Case Studies
1. 23 testers
2. 5 merchants
3. Goal: Understand how people/businesses use electronic payments
1. Slow Internet Affects Transactions
2. Outdated smartphones.
3. Conserve data.
4. Low trust initially
Kenya Pilot

1. MPESA has 86% adoption
2. 24 Kenyans
3. Middle-class, rural & urban-poor
4. Diverse age group
1. Must speak to people’s needs
2. Put new concepts in old frameworks
3. Word-of-mouth
4. Trust people over organizations
Q&A

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celo