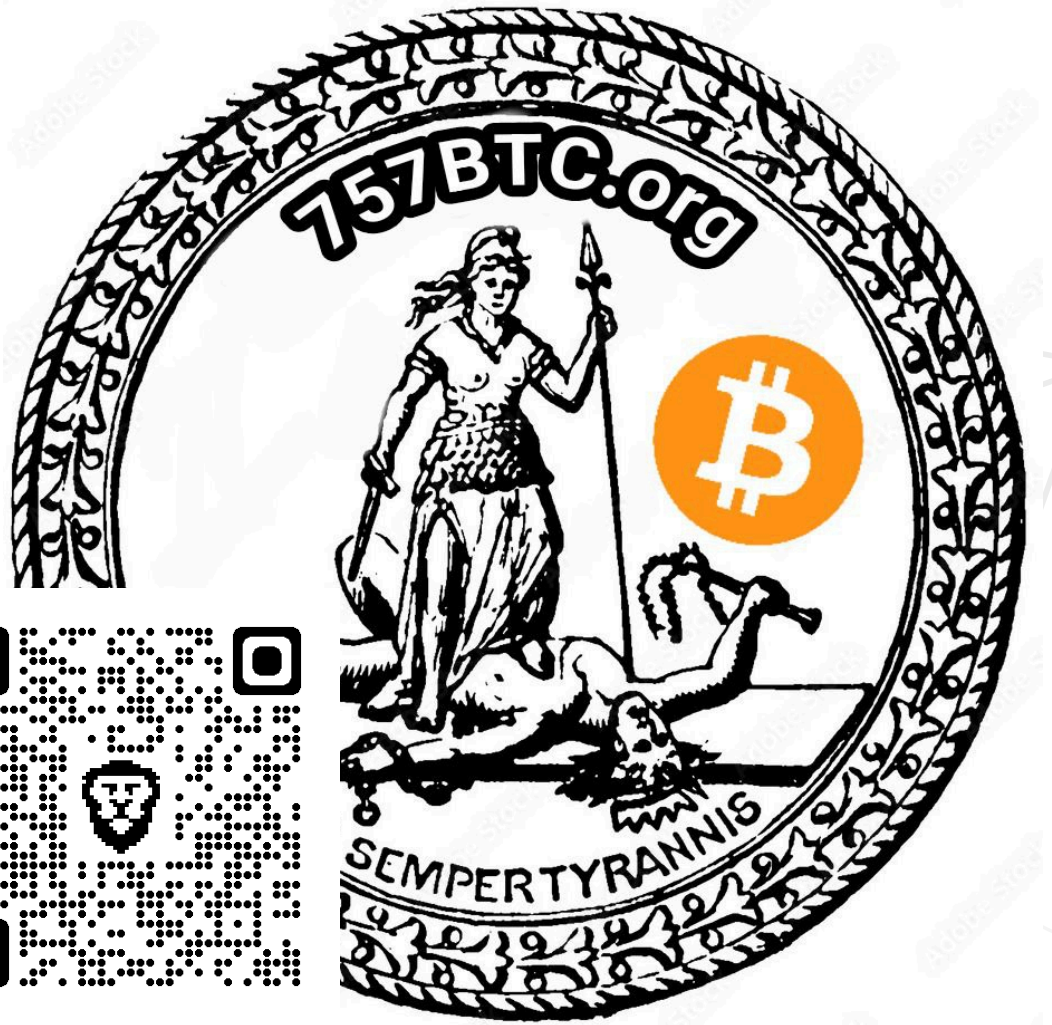
Bitcoin Layers

757BTC

https://www.757btc.org/



Topics

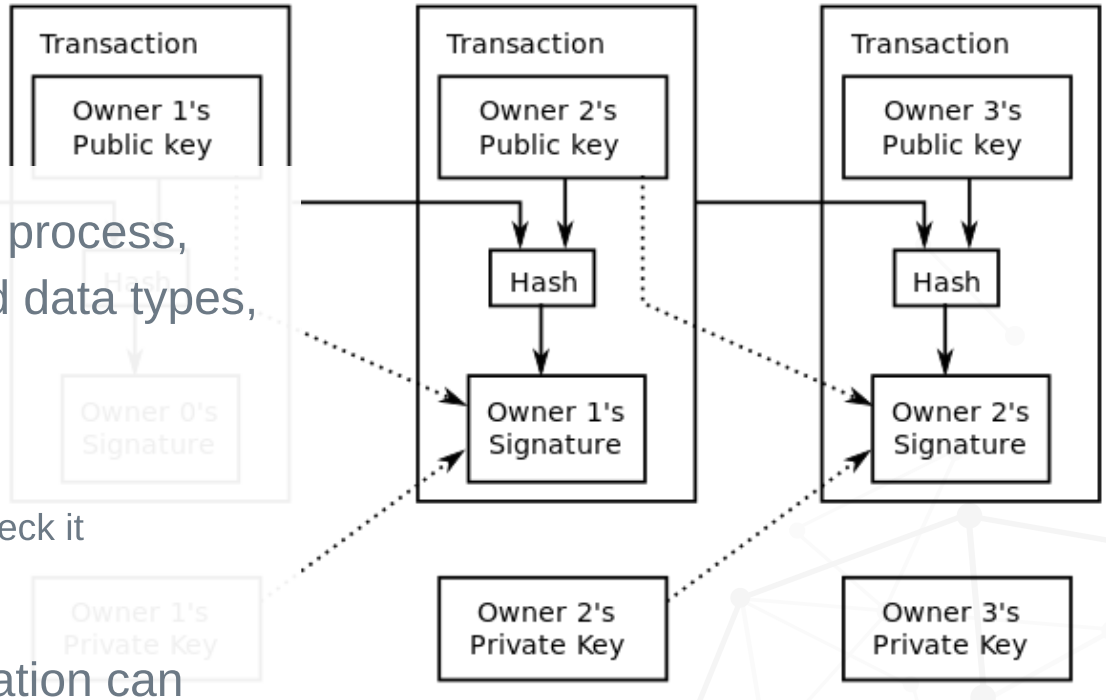
- Typical tech stack, why layers
- Bitcoin Layer 1 (Onchain)
- Bitcoin Layer 2 (Liquid and Lighting)
- Bitcoin Layer 3 (Cashu and Fedimint)
- How to choose

Bitcoin Layers

- Layers enable segregation of application
  - Allows for multiple teams of developers working on each layer
  - Allows for debugging and system resilience
  - Allows for more tools to be built
- Examples
  - Networking layers
  - Computing system layers

Bitcoin the protocol

- Set of rules that describe the process, how to interact, message and data types, variables, and incentives
- Open sourced
  - anyone can view the code and check it
  - anyone can build on it
- Built in a way that any application can easily interact with it as long as the specification is met



Bitcoin Layer 1 (Base Layer, On-chain)

- The most secure, decentralized, and self interacting layer
- Base Layer because this should be the anchor of all other layers
- On-chain because this layer is the bitcoin blockchain
  - You can send and receive bitcoin to the blockchain using wallet applications
  - Transactions are broadcasted and blocks are verified with Full Node servers
  - Transactions are stored and managed in Full Nodes' Mempool
  - Bitcoin blocks are created with Miner servers

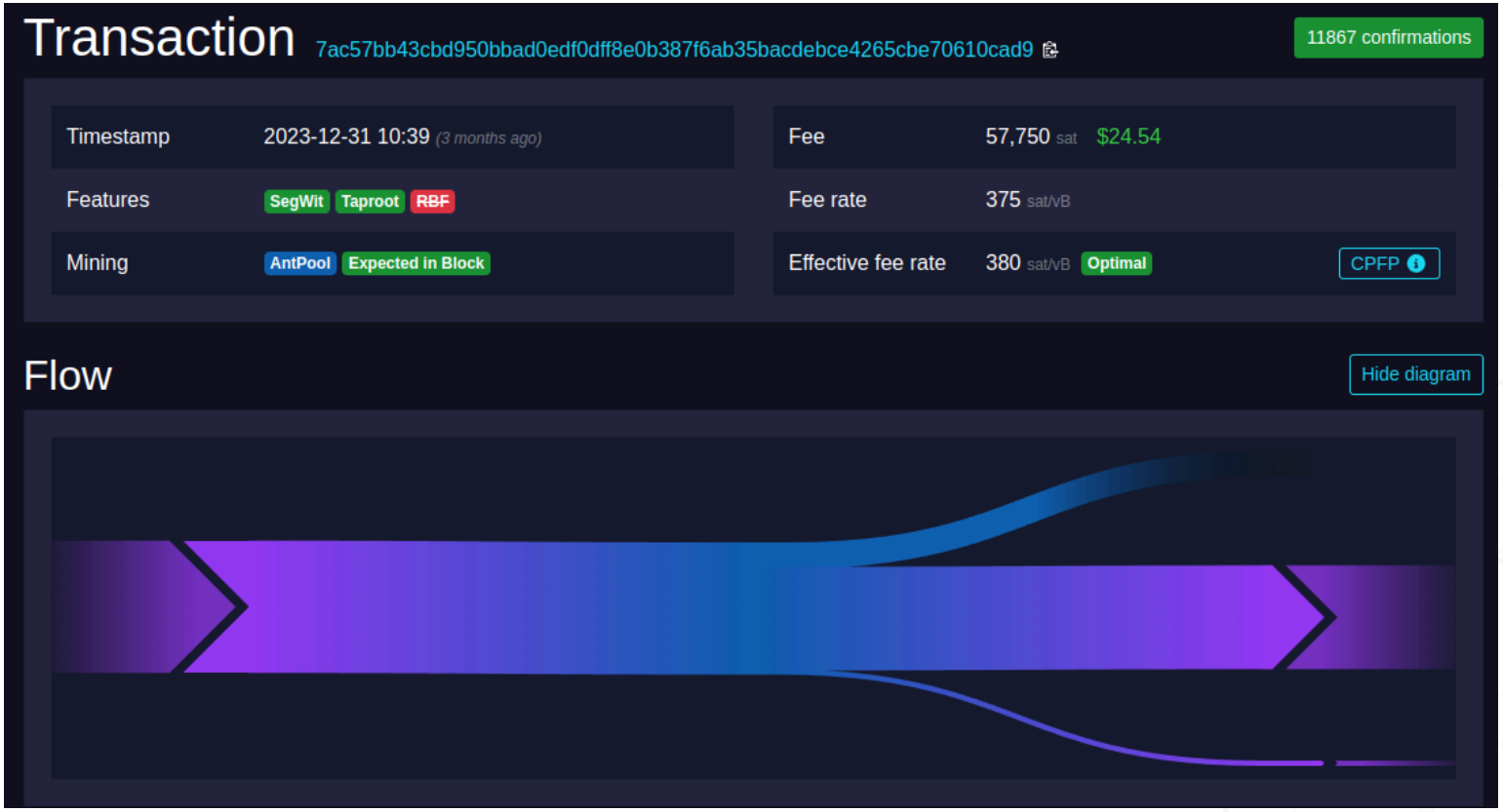
Onchain Fee Market

mempool.space
Explore the full Bitcoin ecosystem®

- When demand is high, onchain fees can be high (fees based on block space)
- Unspent Transactions (UTXO) or Bitcoin address with sats needs to hold large amounts of sats (roughly at least 20,000 sats)

Transaction Example

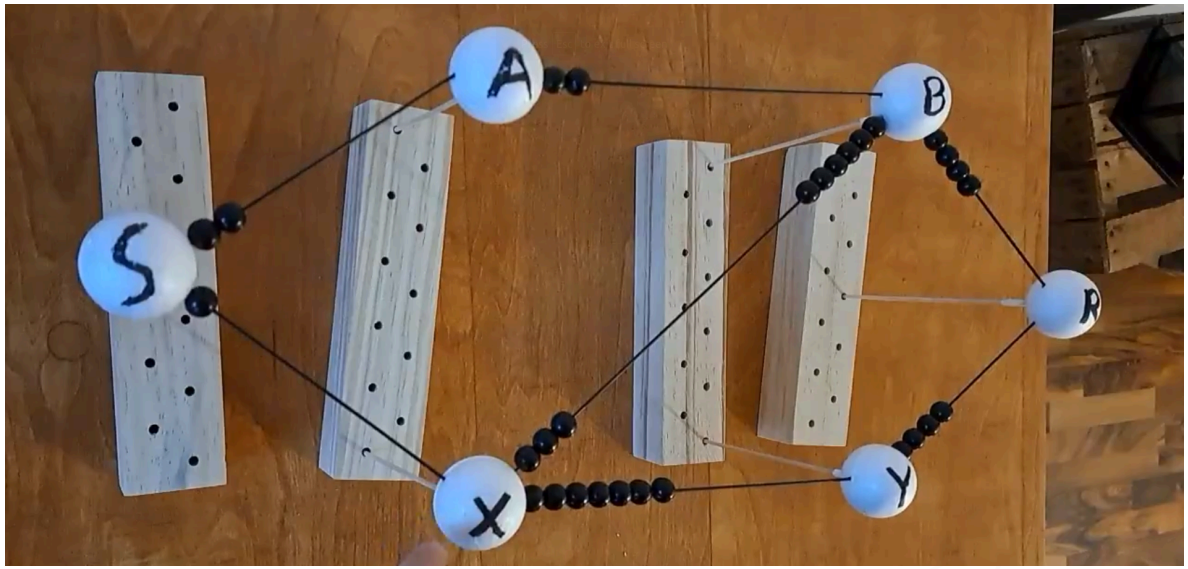
mempool.space
Explore the full Bitcoin ecosystem®



Bitcoin Layer 2

- Base layer is too slow and too expensive
- On-chain is great for wealth storage but not so great for day to day spending
- Shared UTXO concept
  - How can we more efficiently utilize a single UTXO of bitcoin for transactions with a group of people?
  - How can we maintain control to each user (unilateral exit to base layer)
- You don’t get speed and cheap fees for free, there will be trade offs
  - Everyone must choose what risk/reward is best for them based on their needs of Bitcoin
  - Understanding the risks is difficult

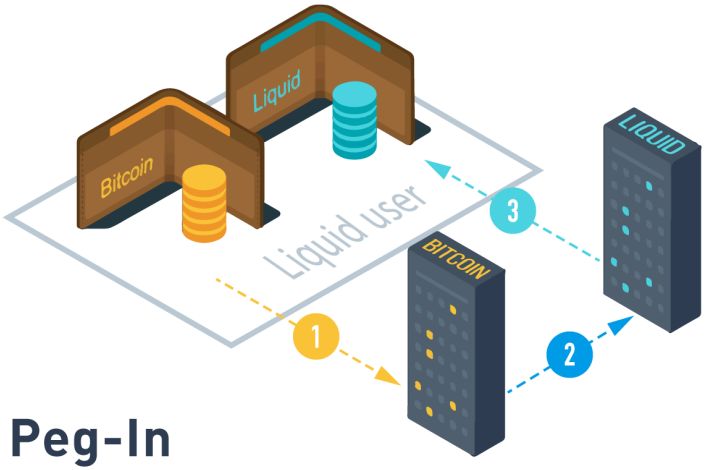
Lightning Layer 2



- Peer to Peer Channel
- Liquidity (in/outbound)
- Multisig shared UTXO
- Both peers (lightning node server) sign transaction
- every time a transaction occurs both peers update the closing channel transaction (signed and everything) but don’t broadcast it until one of the peers wants to close
- closing transaction sends portion of utxo back to each peer based on latest state

Liquid Layer 2

- Federated system
- Liquid requires blocks be signed by at least 2/3's of all block signers
- Round Robin signing, the rest of signers verify the transaction
- 1 minute block times, Larger block size
- Confidential transactions (not even the signers can see)
- Unilateral exit to on-chain (17 minutes roughly)

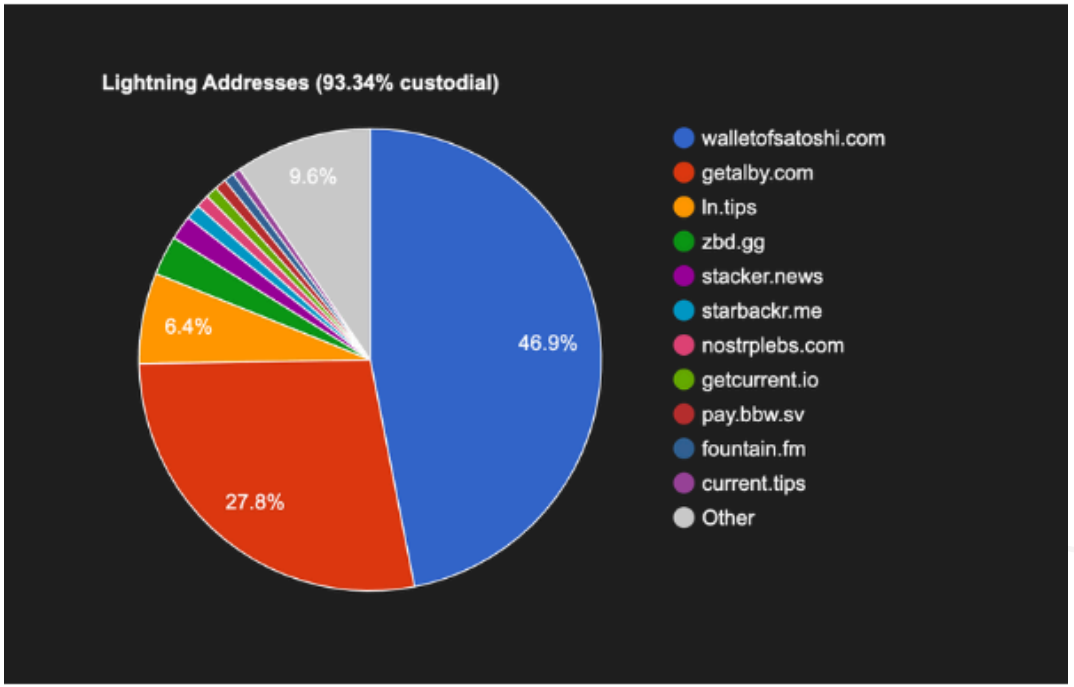


Peg-In

1. Liquid user sends BTC over the Bitcoin Network to peg-in address.
2. Liquid user waits for 102 confirmations. Functionaries in Liquid Network now accept this freezing of BTC and allow access to L-BTC.
3. Liquid user claims L-BTC and it appears in their Liquid wallet.

Layer 2 Utilization

- Lightning most utilized
- Podcast 2.0
- Nostr
- P2P payments
- Online Payments
- Rewards and small transactions
- 93.4% custodial….
- Privacy Sucks…



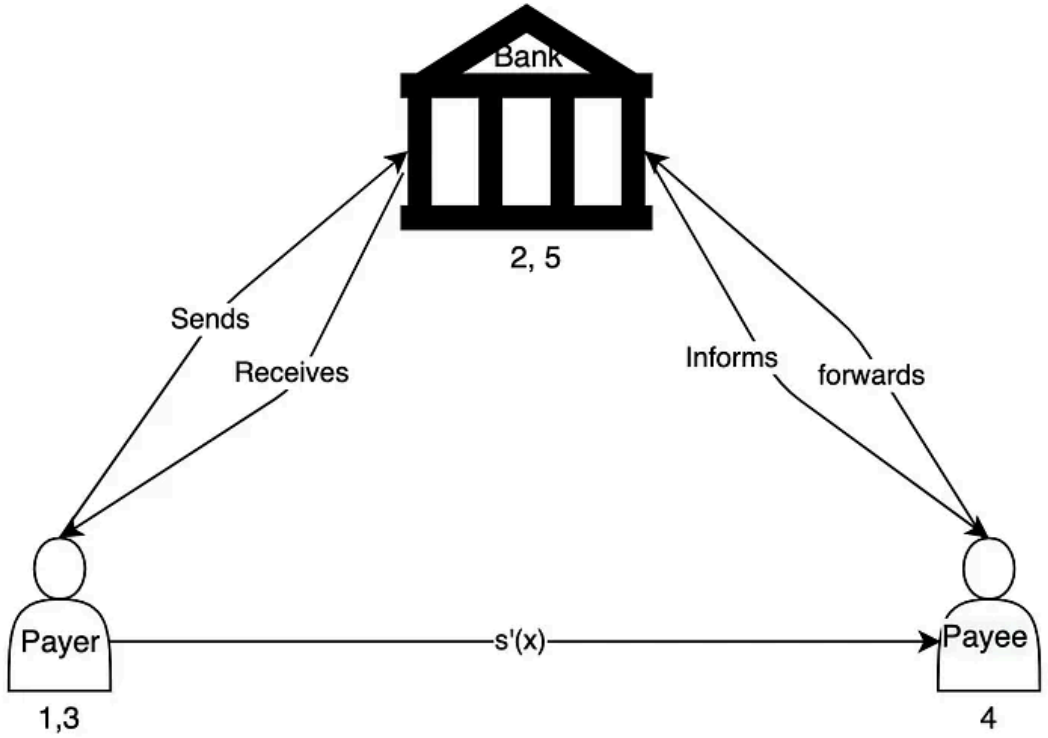
TBM
The Bitcoin Manual

Layer 3 (Chaumian Ecash)

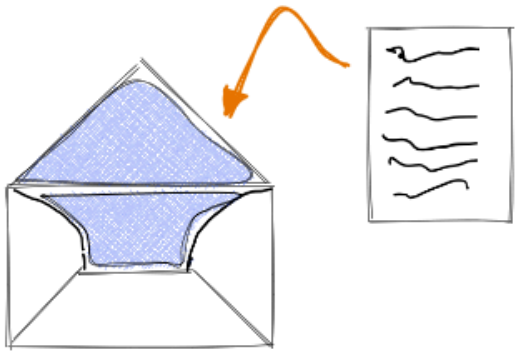
Fedimint

- Can users get the custodial experience but with privacy?
- David Chaum created Ecash cryptography in the 80’s
- Using the Blinded Signature
- Mints can mint ecash from pegged sats
- Creates digital lightning giftcards that can be subdivided (ecash)
- ecash can be redeemed whenever you want
- ecash can be traded between users anonymously offline

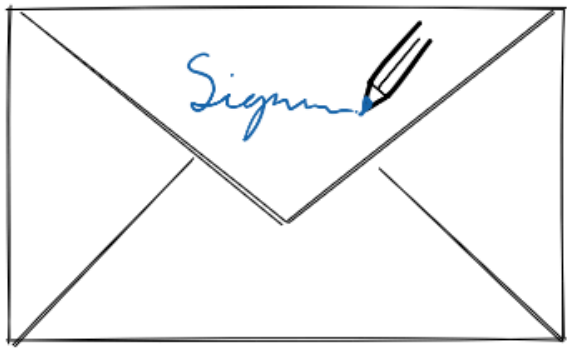
Ecash Minting and Paying Process



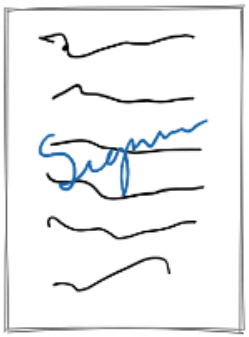
Blinded Signatures



Seal a message
With carbon copy paper



Sign the envelope pressing
into the carbon paper



Signs the message
without revealing content

Gandlaf Presentation: Ecash on Bitcoin

https://seoul2024.gandlaf.com/

Cost/Benefit of Bitcoin Custody

- Custodial vs non-Custodial
- KYC and AML
- Privacy Ramifications
- Forward Privacy
- Tips and Tools

Cashu Wallets and Mints

Wallet
https://cashu.me

Resources

Custody wallets Layer 1/2 (centralized)

- Cashapp - https://cash.app/
- Strike - https://strike.me/

Layer 1 wallet (self custody)

- Blue wallet (general purpose hot) - https://bluewallet.io/features/
- Samourai (privacy focused) - https://samouraiwallet.com/

Layer 2 wallet (self custody)

- Phoenix - https://phoenix.acinq.co/
- Breez - https://breez.technology/
- Zeus - https://zeusln.com/
- Aqua - https://aquawallet.io/

Ecash Wallets (private gift cards)

- Enuts - https://www.enuts.cash/
- Minibits - https://www.minibits.cash/
- Browser Wallet - https://cashu.me
- List of Mints and reputations- https://bitcoinmints.com