Introduction to Bitcoin

For first-time non-technical users

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What is it?

- Digital currencies
  - DigiCash (eCash), e-Gold, Liberty Reserve, ...
- Bitcoin is:
  - **a decentralized digital (crypto-)currency**
  - **a decentralized payment network**
  - **a technology**
    - software
    - a peer-to-peer network/protocol
    - an immutable public transaction ledger (aka blockchain)
    - a proof-of-work algorithm
    - a decentralized trustless platform using elliptic-curve cryptography (PKI)
    - a novel consensus mechanism

Decentralized Digital Cryptocurrency

- bank creates/controls currency
- transfer of value via an institution
- higher-fees / centralized control

Centralized

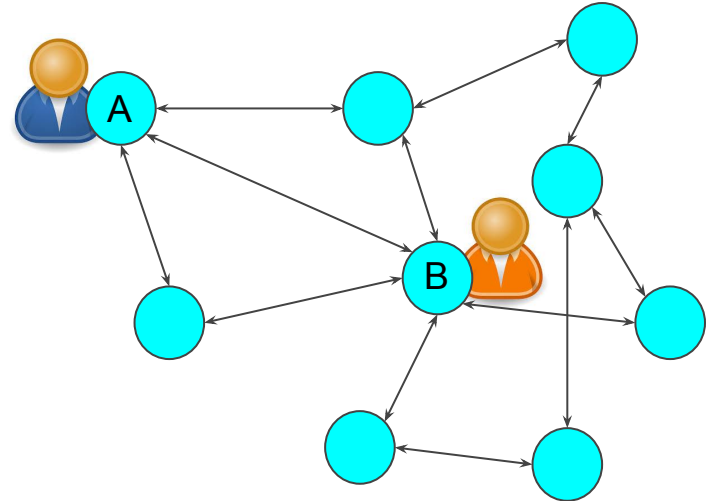# **Decentralized** Digital Cryptocurrency

- bank creates/controls currency
- transfer of value via an institution
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- currency is created algorithmically and distributed
- direct transfer of value from A -> B
- no intermediaries / very low fees

Centralized

Decentralized

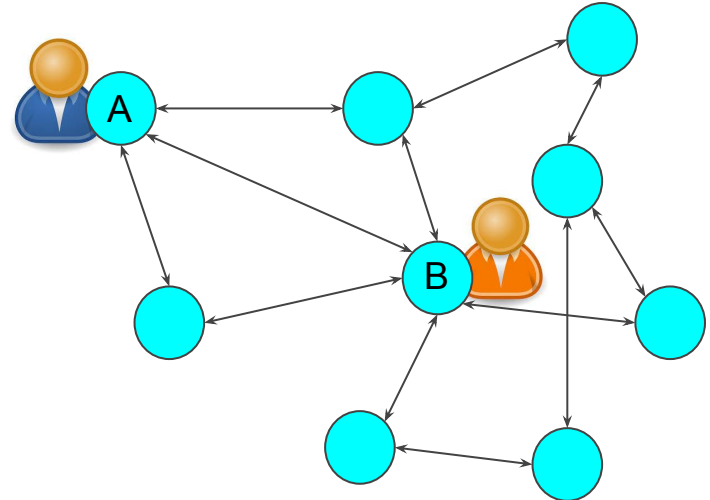# Decentralized **Digital** Cryptocurrency

- digital
  - 9.00 -15.00 Mon-Fri
  - inter-institution fees

- digital
  - only pre-requisite is an internet connection
  - Global
  - 24/7

Centralized

Decentralized

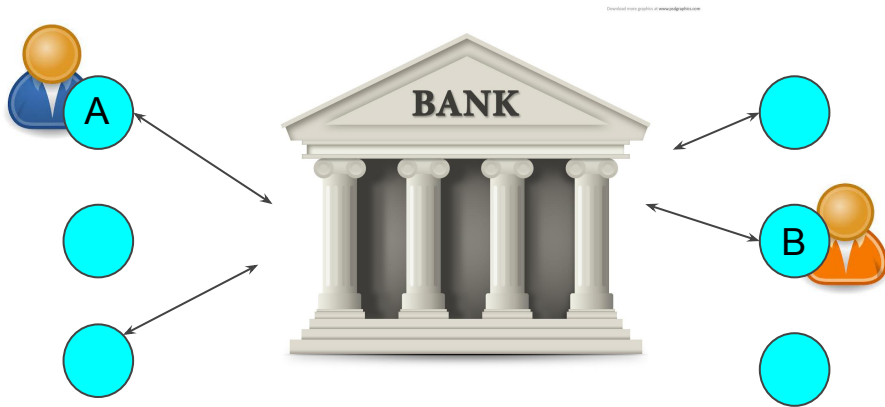# Decentralized Digital **Cryptocurrency**

- anti-counterfeiting
  - centralized control
  - bank's security infrastructure
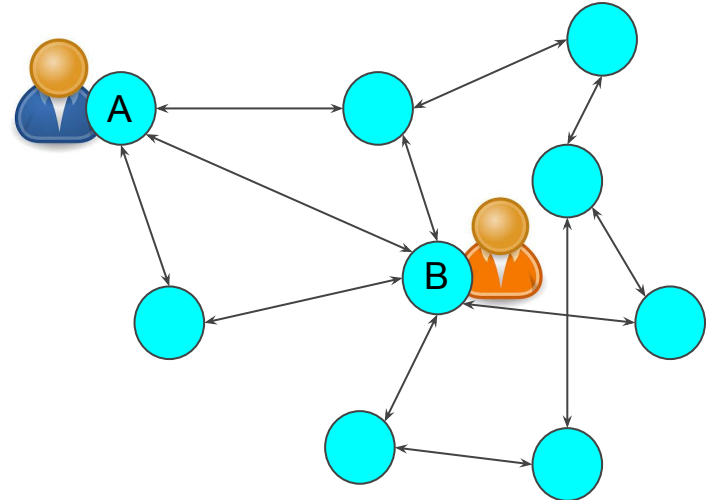 - enforced by bank -> state -> police

- anti-counterfeiting
  - algorithms
  - open security infrastructure
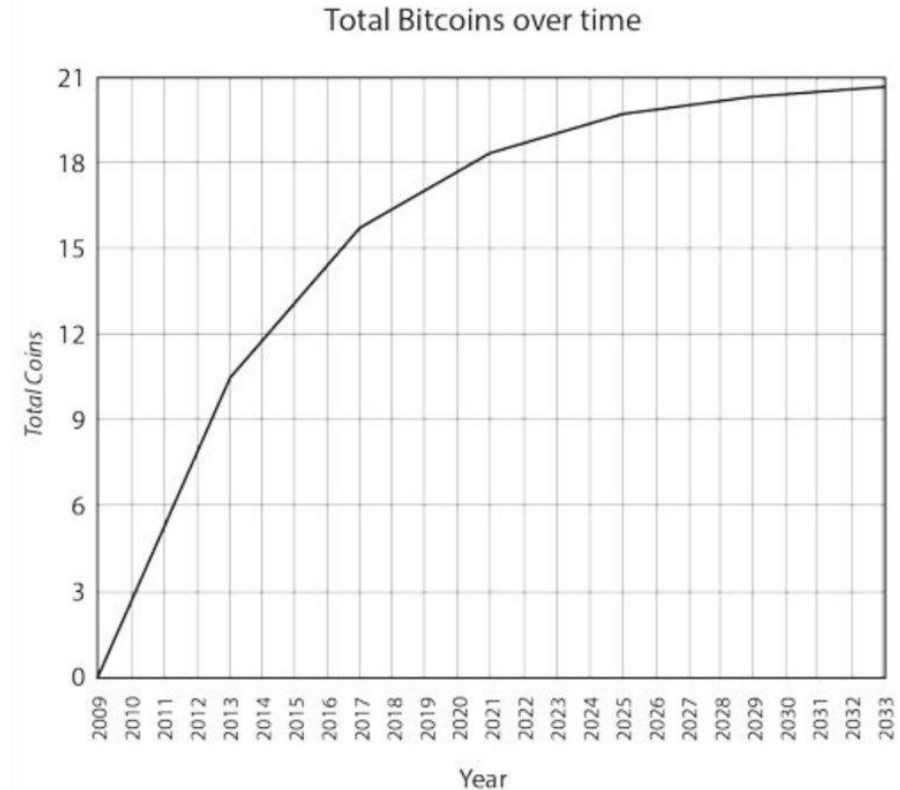 - enforced by cryptography

Centralized

Decentralized

Currency characteristics (controlled supply)

- Bitcoin
  - issued every ~10 minutes
  - 99% up to ~2036
  - deflationary
- Fiat currency (euro, dollars, etc.)
  - inflationary

Total Bitcoins over time

Currency characteristics (transparent rules)

- Transparent rules
  - which transactions are valid?
  - how is ownership determined?
  - how are new coins distributed?
- Open source software
  - anyone can verify

Currency characteristics (consensus-based)

- Valid rule set
  - majority governed
    - valid transactions
    - which transactions occurred
    - …
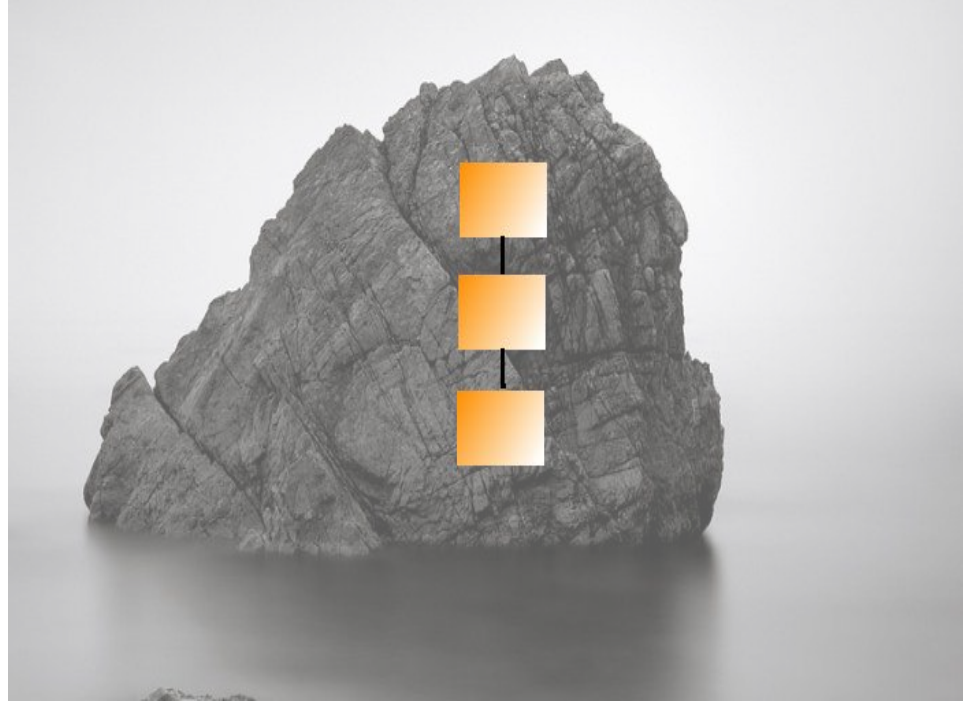 - by supporting a specific version

Currency characteristics (tx immutability)

- Immutable tx history / ledger
  - blockchain
    - chain of blocks
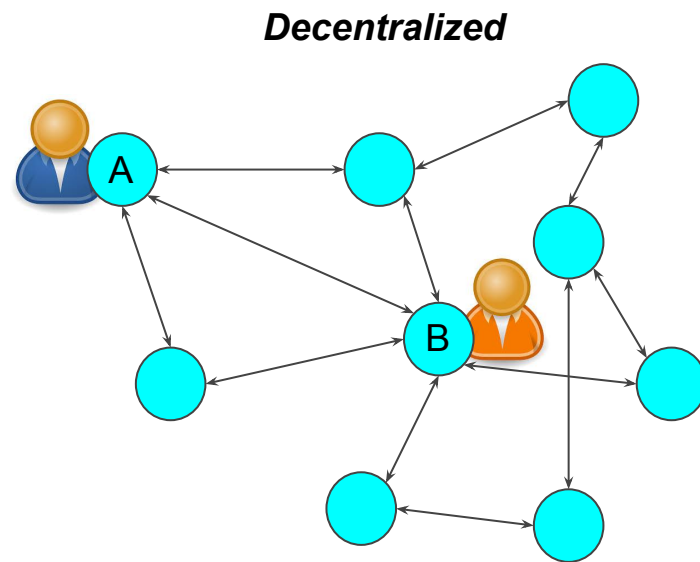   - deeper -> safer

Currency characteristics (tx transparency)

- Public tx history / ledger
  - transparent transactions
  - auditable / verifiable

How it works

- Bird's eye view
  - peer-to-peer network (of)
  - bitcoin nodes (open source software)
  - run and secure the network
  - transaction history (aka blockchain)
    - immutability
    - transparency
- Why run a bitcoin node?
  - volunteerism
  - bitcoin rewards
- Mining
  - secures the network
  - the process of minting new coins

Decentralized

Next: Some use cases

Applications

- **Remittances**
- **Payments**
- **Bank services for the unbanked**
- **Store of Value**
- **Digital Tokens**
- Decentralized Applications
- Micropayments
- Proof of Existence
- Smart Contracts
- Decentralized Autonomous Organizations
- Internet of Things / Machine to Machine
- Voting / Identity
- Private Blockchains
- Other?

Remittances

- €600 billion market
  - Western Union (15%)
  - MoneyGram
- High fees
  - depends on location
  - up to 15%
  - more for same day delivery
- Up to same day delivery
- Anywhere there is an agent
- Working hours
  - plus extended hours

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- Bitcoin slowly gains momentum
- ~6¢ irrespective of amount
  - 1BTC = €585
- Up to an hour
  - in practice it is much faster
- Anywhere there is a connected machine
  - Internet (no need for permanent access)
- Anytime
  - 24/7
- No intermediaries, but…
  - bitspark.io
  - rebit.ph
  - bitpesa.co

Making/Receiving Payments

- Online
- Credit cards
  - 2%-6% + small flat rate
- Debit cards
  - 2%-3% + small flat rate
- Paypal
  - 2.9% + $0.30
- Bitcoin
  - none
  - but the sender typically pays ~6¢

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- Merchants can offer discounts for bitcoin
- Payment Processing
  - Coinbase, BitPay
- Point of Sale
  - Bitcoin PoS (android app)

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- Some major companies
  - Overstock
  - Microsoft
  - Dell
  - Expedia
  - Time Inc.
  - DISH Network
  - Newegg
  - Zynga
  - UK's Theatre Tickets Direct
  - AirBaltic
  - CheepAir
  - …
- Do they keep their bitcoins?
- Can Bitcoin handle demand if widely adopted?

Be your own bank

- Bank services for the unbanked/underbanked
    - payments
    - remittances
    - micro-payments / donations
    - ... using Mobiles

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  - capital controls
  - censorship

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- Store of value (vs hyper-inflation)
  - gold
  - reserve currencies
  - bitcoin
    - deflationary
    - Latin/South America, China, Russia.

Digital Tokens

- represent/transfer real world value/asset
  - theater tickets
  - consultancy hours (Kostas-1Hour)
  - authentication mechanism
  - stock markets' shares
  - new currency
  - car ownership/key, house deeds, …

- open blockchain technology
  - immutability
  - transparency

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- Swedish National Land Survey (on trial)
  - immutability / transparency
  - automation of selling process
  - less paperwork (months -> days/hours)
  - more secure
- Nasdaq Composite Index
  - pre-IPO trading
  - equity shares on Bitcoin's blockchain
- LetsTalkBitcoin.com (publishing platform)
  - LTBC token
  - Proof of Participation
  - token-based access
- GetGems (social media rewards platform)
- StorJ (decentralized cloud storage)
- FoldingCoin (help scientists cure diseases)
- BitCrystals - Spells of Genesis game
- …

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Next: Basic concepts / usage

Basic concepts (Bitcoin address / private key)
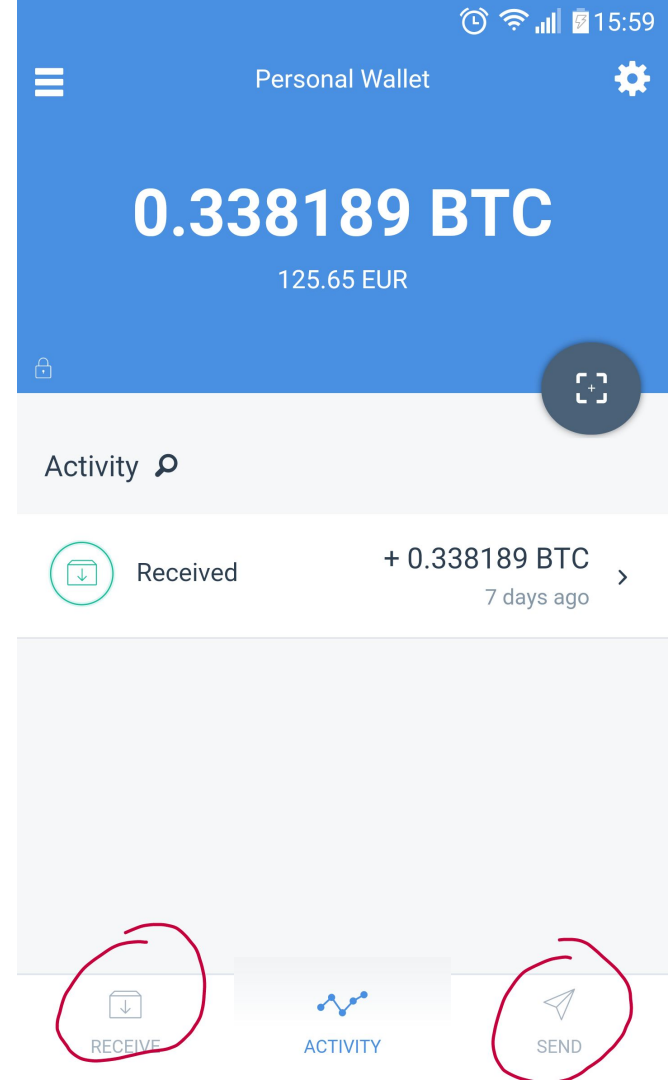
Bitcoin Address

SHARE

1Atuv5zFi5P5dzgfHNGWWR8EWjRSzDbCEL

Private Key

SECRET

L13HRyX7Lj3TLve4jAx53ink49sR6eLrJP2q5kvijPQDzGBzVARG

Basic concepts (Bitcoin wallets)

- Wallet
  - manages bitcoin addresses (accounts)
  - can send (receive) bitcoins
- Types
  - desktop
  - mobile
  - online/web wallet
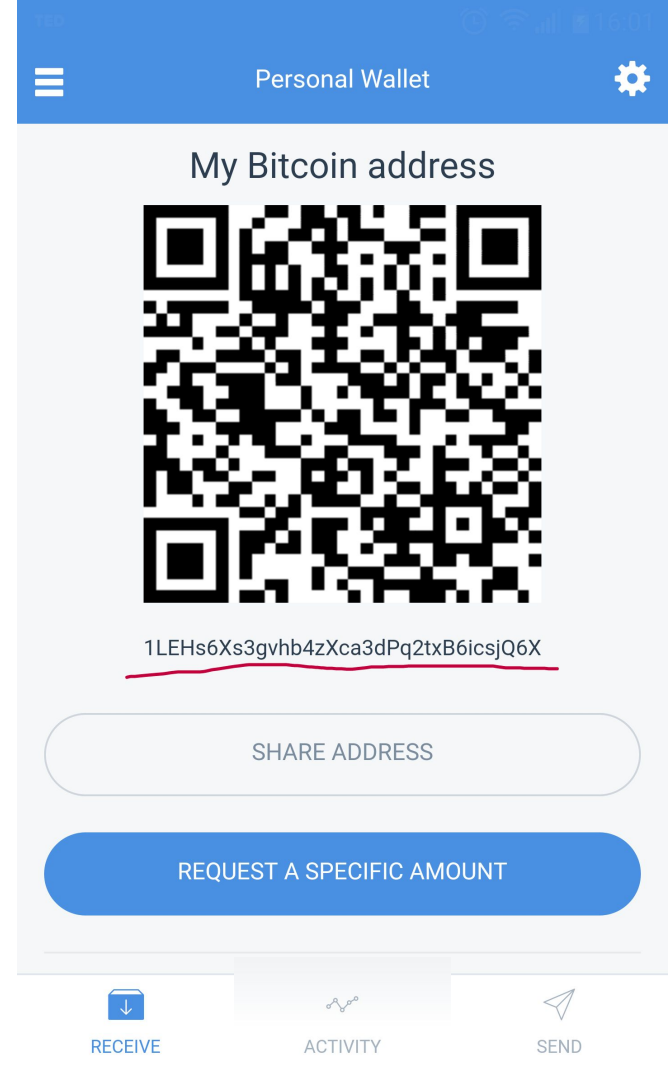 - hardware wallet
- Wallet examples
  - Copay, Mycelium, ...
  - https://bitcoin.org/en/choose-your-wallet

Usage:

- Balance
- Activity
- Receive
- Send

Usage: receive bitcoins

- Provide address string, or
- QR code

Personal Wallet

My Bitcoin address

1LEHs6Xs3gvhb4zXca3dPq2txB6icsjQ6X

SHARE ADDRESS

REQUEST A SPECIFIC AMOUNT

RECEIVE   ACTIVITY   SEND

Usage: send bitcoins

- To: (address / QR code)
- Amount: (in bitcoins or preferred currency)

How to get Bitcoins

- Mine Bitcoins
  - nowadays very competitive / difficult
- Buy Bitcoins from an online exchange
  - bitcoins and/of fiat on exchange are controlled by the exchange
- Buy Bitcoins from an ATM
- Buy Bitcoins directly from another user
- Sell services or goods for bitcoins

Greek Community

- Bitcoin and Blockchain Tech Meetup (Thessaloniki)
  - **http://www.meetup.com/BlockchainGreece-1/**
- Bitcoin and Blockchain Tech Meetup (Athens)
  - http://www.meetup.com/BlockchainGreece-0/
- Bitcointalk forum (Greek section)
  - https://bitcointalk.org/index.php?board=120.0
- Blog
  - http://www.bitcoin-gr.org/
- Facebook
  - https://www.facebook.com/groups/bitcoin.gr/?fref=ts
- Reddit
  - reddit.com/r/bitcoin_greece

Questions?

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