Bitcoin and the technology behind it

History of Bitcoin

History of Bitcoin

Satoshi Nakamoto

History of Bitcoin

2009 : First blocks generated, some transactions, first exchange rate (US$ 1 = 1,309 BTC)

2010 : Patent published, Bitcoins for pizza, Mt Gox foundation, over-the-counter market, Silk Road opening

2011 : Parity with US$ (1 to 1), TIME publishes Bitcoin article, Great Bubble of 2011, first e-wallets, first conferences

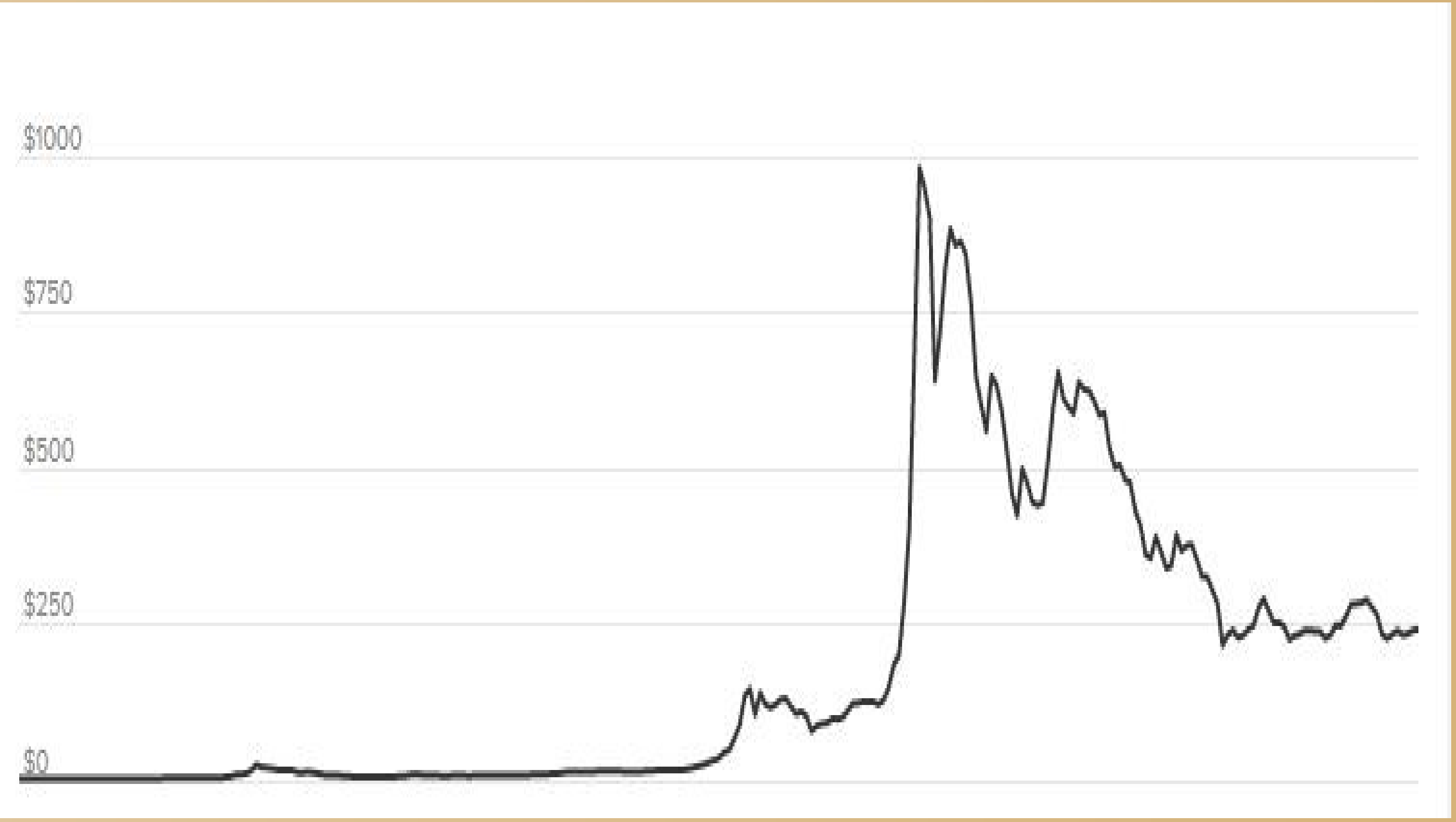
2012 : Startups grow everywhere

History of Bitcoin

2013 : Cyprus

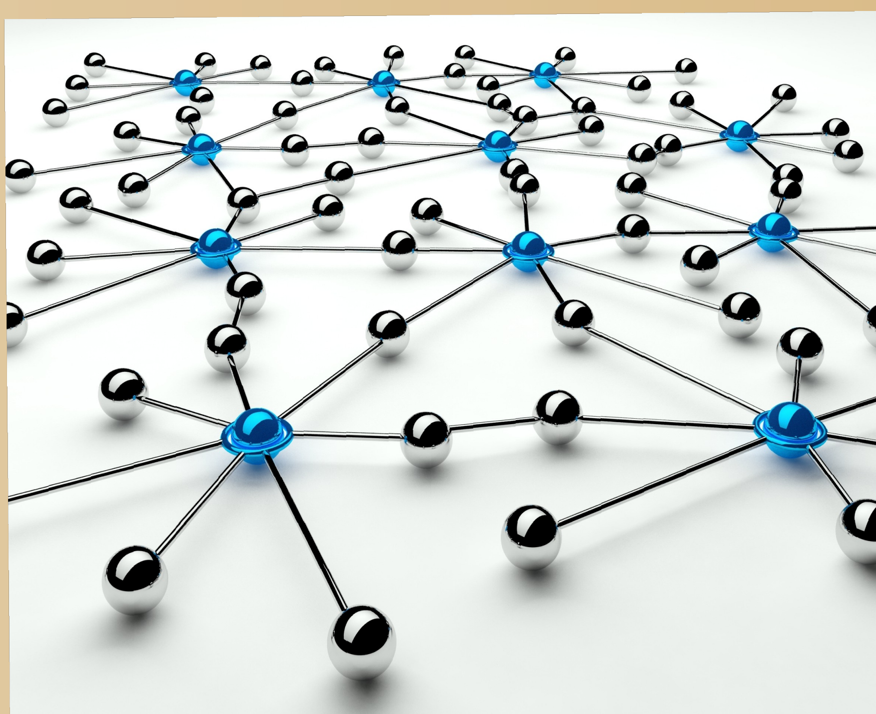
History of Bitcoin

Highest = $ 1,124.76
Today = $ 230



Blockchain

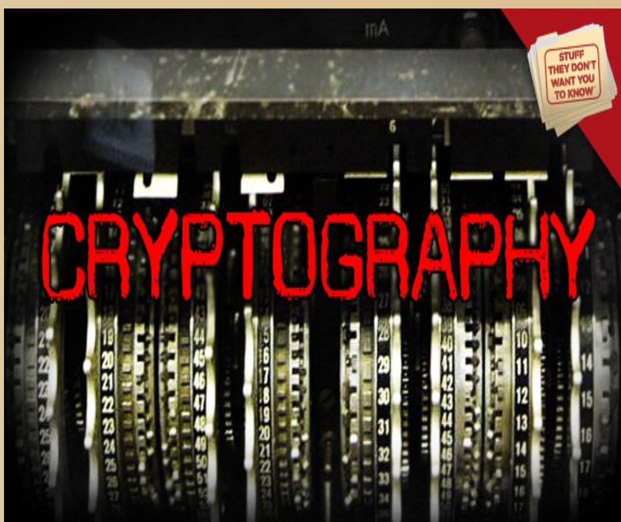
Network → Public Ledger



Blockchain

Transactions

Blockchain



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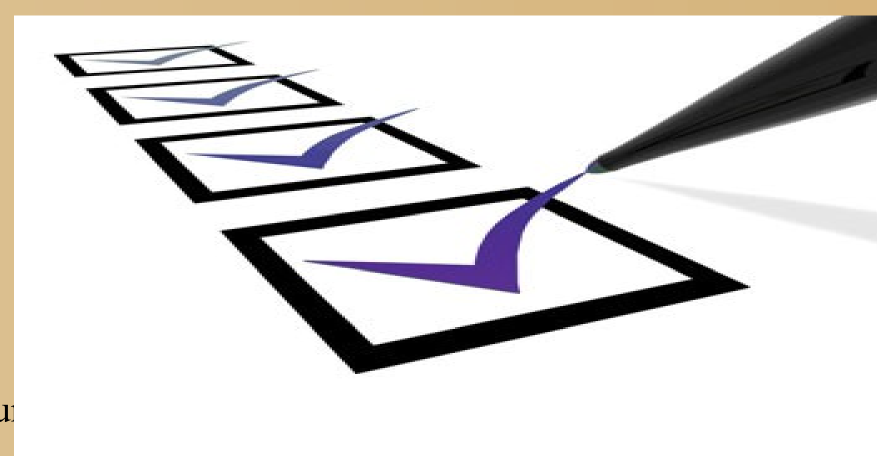
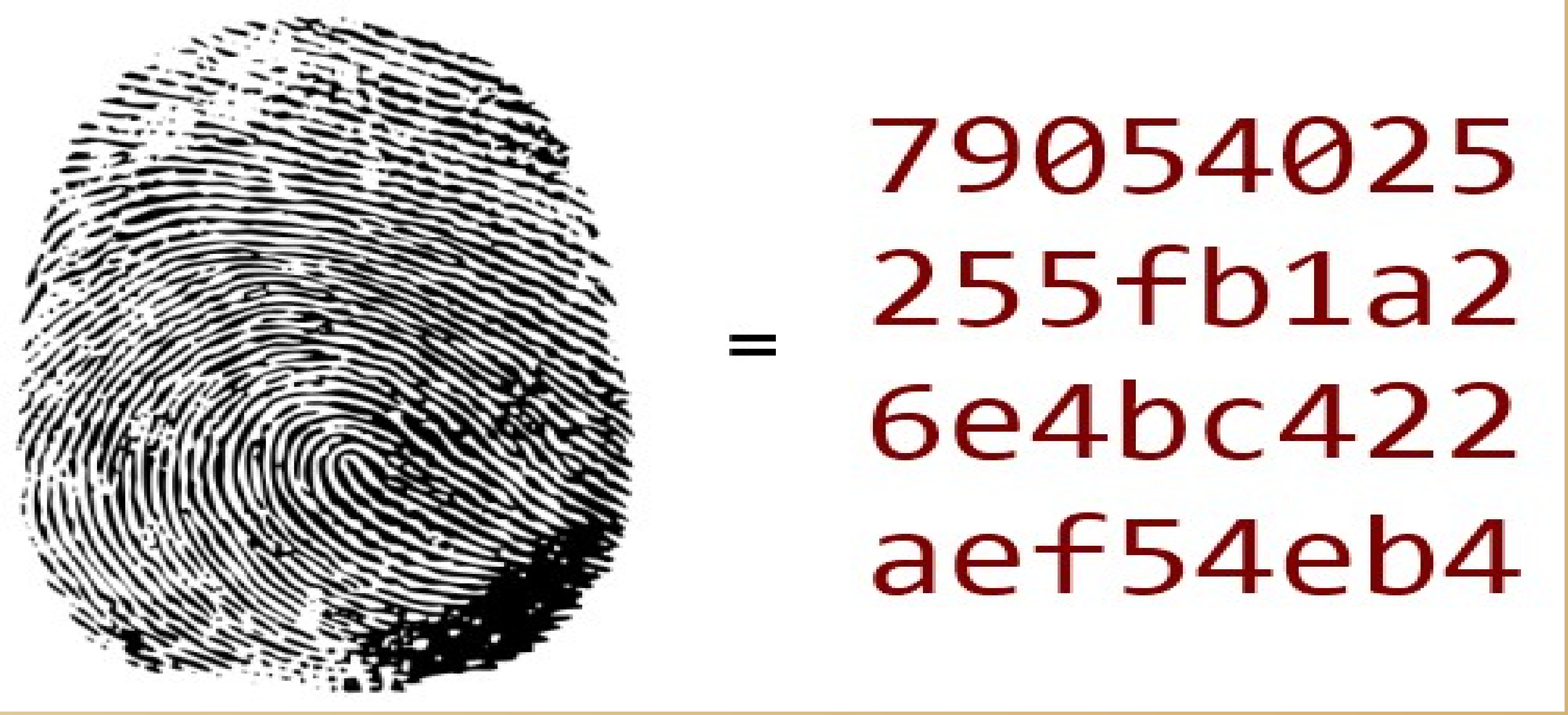


Blocks

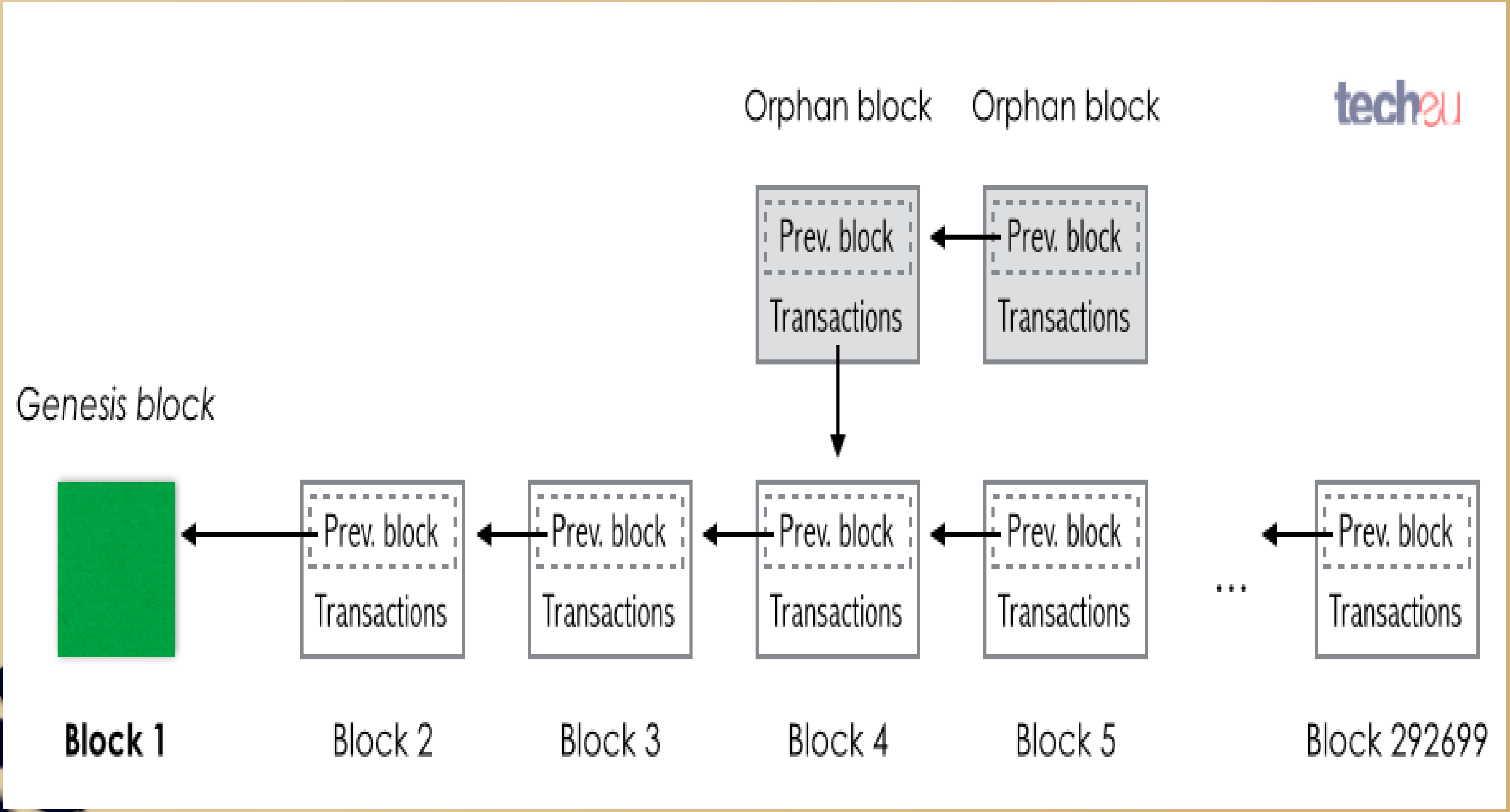
Chunks of information

Blocks

Hashes



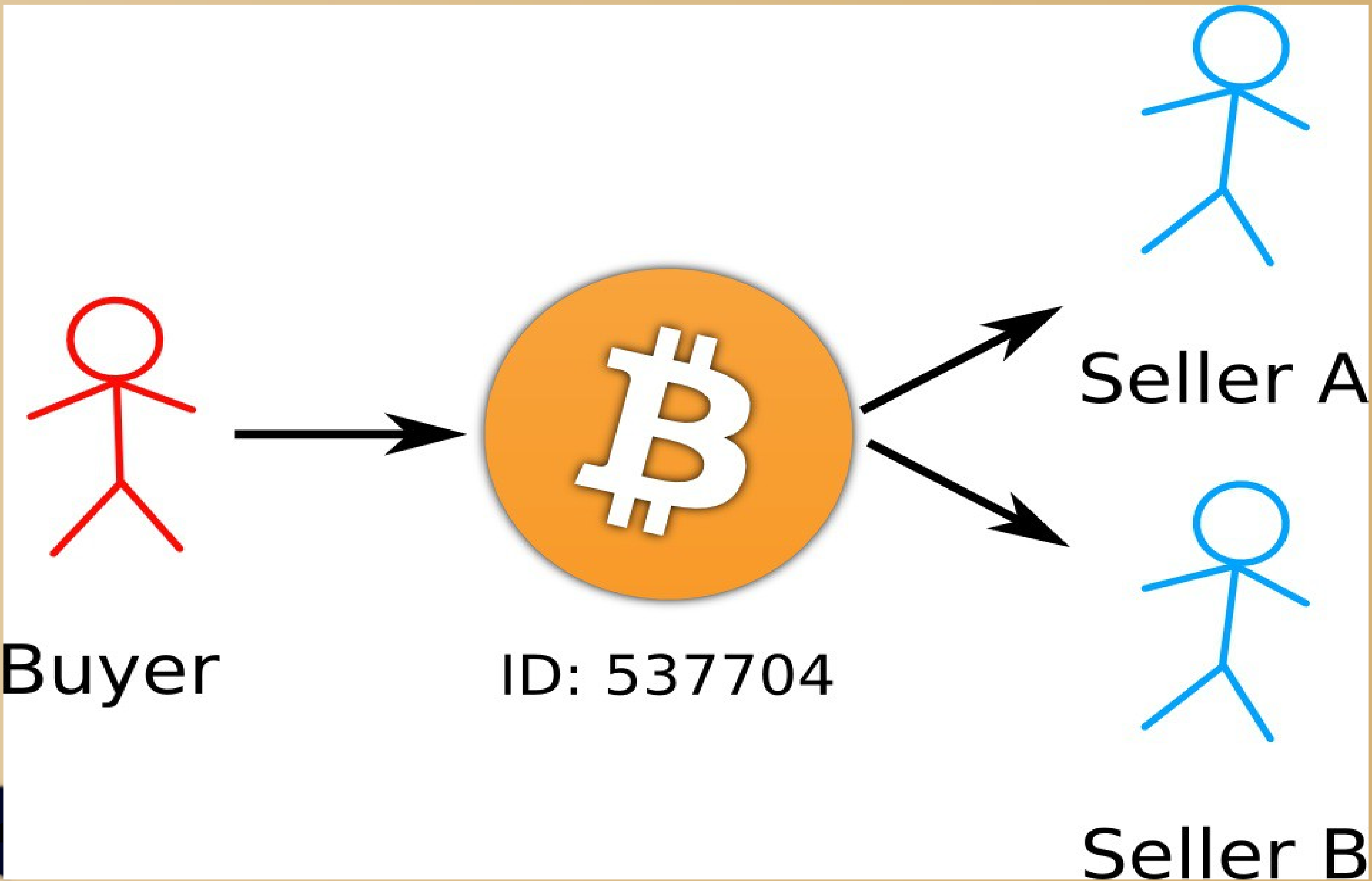
Blocks


Orphan block
Orphan block
Prev. block
Transactions
Prev. block
Transactions
Genesis block
Prev. block
Transactions
Prev. block
Transactions
Prev. block
Transactions
Prev. block
Transactions
...
Prev. block
Transactions
Block 1
Block 2
Block 3
Block 4
Block 5
Block 292699

Blocks

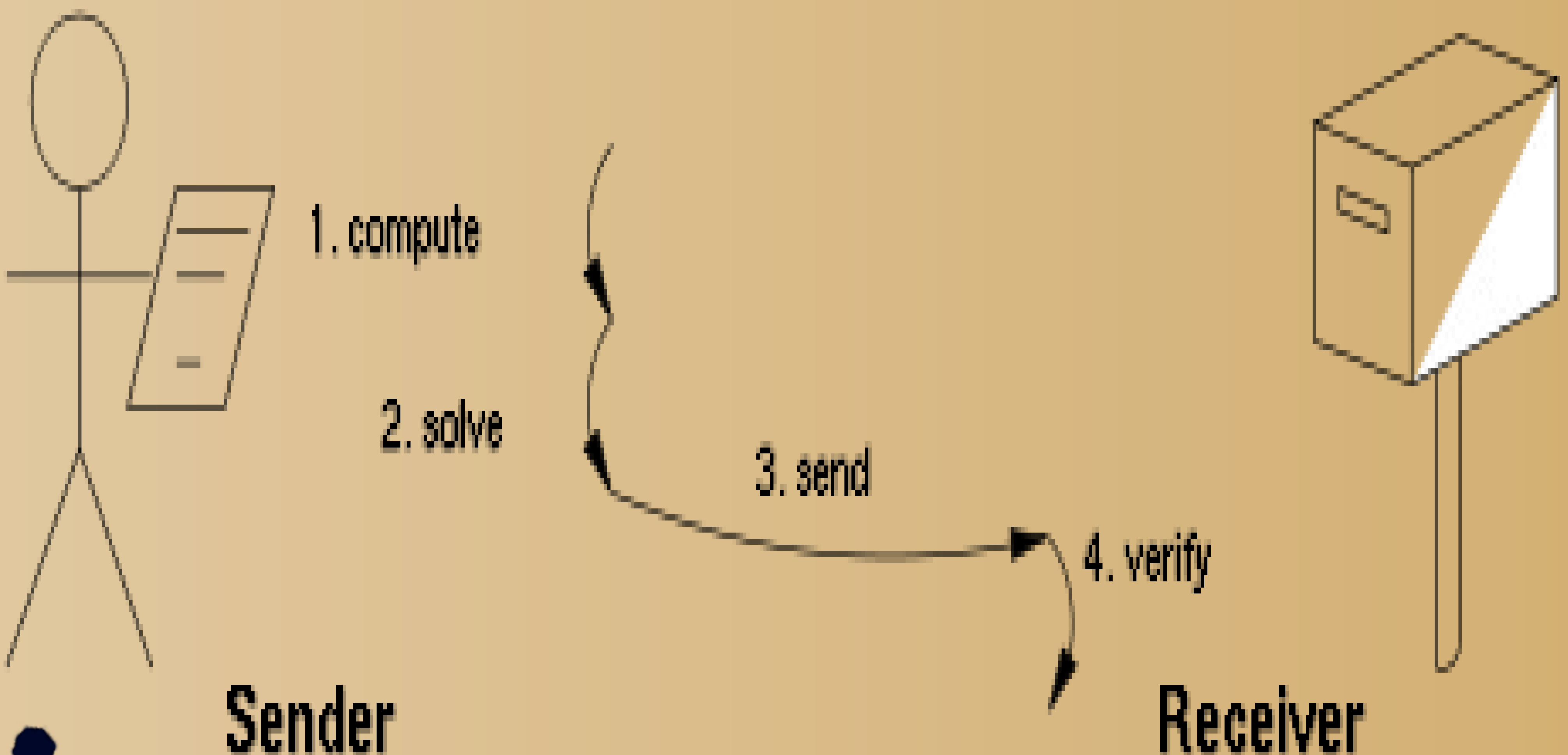
Validation

Double spending



Double spending

Proof of Work



Proof of Work

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Mining

$$\int x \operatorname{sech}^{-1}\frac{x}{a}\,dx = \frac{x^2}{2}\operatorname{sech}^{-1}\frac{x}{a} - \frac{a}{2}\sqrt{(a^2-x^2)}, \quad [\operatorname{sech}^{-1}(x/a) > 0],$$

$$= \frac{x^2}{2}\operatorname{sech}^{-1}\frac{x}{a} + \frac{a}{2}\sqrt{(a^2-x^2)}, \quad [\operatorname{sech}^{-1}(x/a) < 0].$$

$$\int x^2 \operatorname{sech}^{-1}\frac{x}{a}\,dx = \frac{x^3}{3}\operatorname{sech}^{-1}\frac{x}{a} - \frac{ax}{6}\sqrt{(a^2-x^2)} + \frac{a^3}{6}\sin^{-1}\frac{x}{a}, \quad [\operatorname{sech}^{-1}(x/a) > 0],$$

$$= \frac{x^3}{3}\operatorname{sech}^{-1}\frac{x}{a} + \frac{ax}{6}\sqrt{(a^2-x^2)} - \frac{a^3}{6}\sin^{-1}\frac{x}{a}, \quad [\operatorname{sech}^{-1}(x/a) < 0].$$

$$\int x^p \operatorname{sech}^{-1}\frac{x}{a}\,dx$$

$$= \frac{x^{p+1}}{p+1}\operatorname{sech}^{-1}\frac{x}{a} + \frac{a}{p+1}\int\frac{x^p dx}{\sqrt{(a^2-x^2)}}, \quad [\operatorname{sech}^{-1}(x/a) > 0, \quad p \neq -1],$$

$$= \frac{x^{p+1}}{p+1}\operatorname{sech}^{-1}\frac{x}{a} - \frac{a}{p+1}\int\frac{x^p dx}{\sqrt{(a^2-x^2)}}, \quad [\operatorname{sech}^{-1}(x/a) < 0, \quad p \neq -1].$$

$$\int \frac{1}{x}\operatorname{sech}^{-1}\frac{x}{a}\,dx = -\frac{1}{2}\left(\log\frac{a}{x}\right)\log\frac{4a}{x} - \frac{1}{2^3}\frac{x^2}{a^2} - \frac{1\cdot 3}{2\cdot 4^3}\frac{x^4}{a^4} - \frac{1\cdot 3\cdot 5}{2\cdot 4\cdot 6^3}\frac{x^6}{a^6} - \cdots, \quad [\operatorname{sech}^{-1}(x/a) > 0],$$

$$= \frac{1}{2}\left(\log\frac{a}{x}\right)\log\frac{4a}{x} + \frac{1}{2^3}\frac{x^2}{a^2} + \frac{1\cdot 3}{2\cdot 4^3}\frac{x^4}{a^4} + \frac{1\cdot 3\cdot 5}{2\cdot 4\cdot 6^3}\frac{x^6}{a^6} + \cdots, \quad [\operatorname{sech}^{-1}(x/a) < 0].$$

$$\int \frac{1}{x^2}\operatorname{sech}^{-1}\frac{x}{a}\,dx = -\frac{1}{x}\operatorname{sech}^{-1}\frac{x}{a} + \frac{\sqrt{(a^2-x^2)}}{ax}, \quad [\operatorname{sech}^{-1}(x/a) > 0],$$

$$= -\frac{1}{x}\operatorname{sech}^{-1}\frac{x}{a} - \frac{\sqrt{(a^2-x^2)}}{ax}, \quad [\operatorname{sech}^{-1}(x/a) < 0].$$

$$\int \frac{1}{x^p}\operatorname{sech}^{-1}\frac{x}{a}\,dx$$

$$= -\frac{1}{(p-1)x^{p-1}}\operatorname{sech}^{-1}\frac{x}{a} - \frac{a}{p-1}\int\frac{dx}{x^p\sqrt{(a^2-x^2)}}, \quad [\operatorname{sech}^{-1}(x/a) > 0, \quad p \neq 1],$$

$$= -\frac{1}{(p-1)x^{p-1}}\operatorname{sech}^{-1}\frac{x}{a} + \frac{a}{p-1}\int\frac{dx}{x^p\sqrt{(a^2-x^2)}}, \quad [\operatorname{sech}^{-1}(x/a) < 0, \quad p \neq 1].$$

For 738–739.9, $0 < x/a < 1$.

$$\int \operatorname{csch}^{-1}\frac{x}{a}\,dx = x\operatorname{csch}^{-1}\frac{x}{a} + a\sinh^{-1}\frac{x}{a}.$$

$$\int x\operatorname{csch}^{-1}\frac{x}{a}\,dx = \frac{x^2}{2}\operatorname{csch}^{-1}\frac{x}{a} + \frac{a}{2}\sqrt{(x^2+a^2)}.$$

$$\int x^p\operatorname{csch}^{-1}\frac{x}{a}\,dx = \frac{x^{p+1}}{p+1}\operatorname{csch}^{-1}\frac{x}{a} + \frac{a}{p+1}\int\frac{x^p dx}{\sqrt{(x^2+a^2)}}, \quad [p \neq -1].$$

$$\int \frac{1}{x}\operatorname{csch}^{-1}\frac{x}{a}\,dx = -\frac{a}{x} + \frac{1}{2\cdot 3\cdot 3}\frac{a^3}{x^3} - \frac{1\cdot 3}{2\cdot 4\cdot 5\cdot 5}\frac{a^5}{x^5} + \frac{1\cdot 3\cdot 5}{2\cdot 4\cdot 6\cdot 7\cdot 7}\frac{a^7}{x^7} - \cdots, \quad [x^2 > a^2],$$

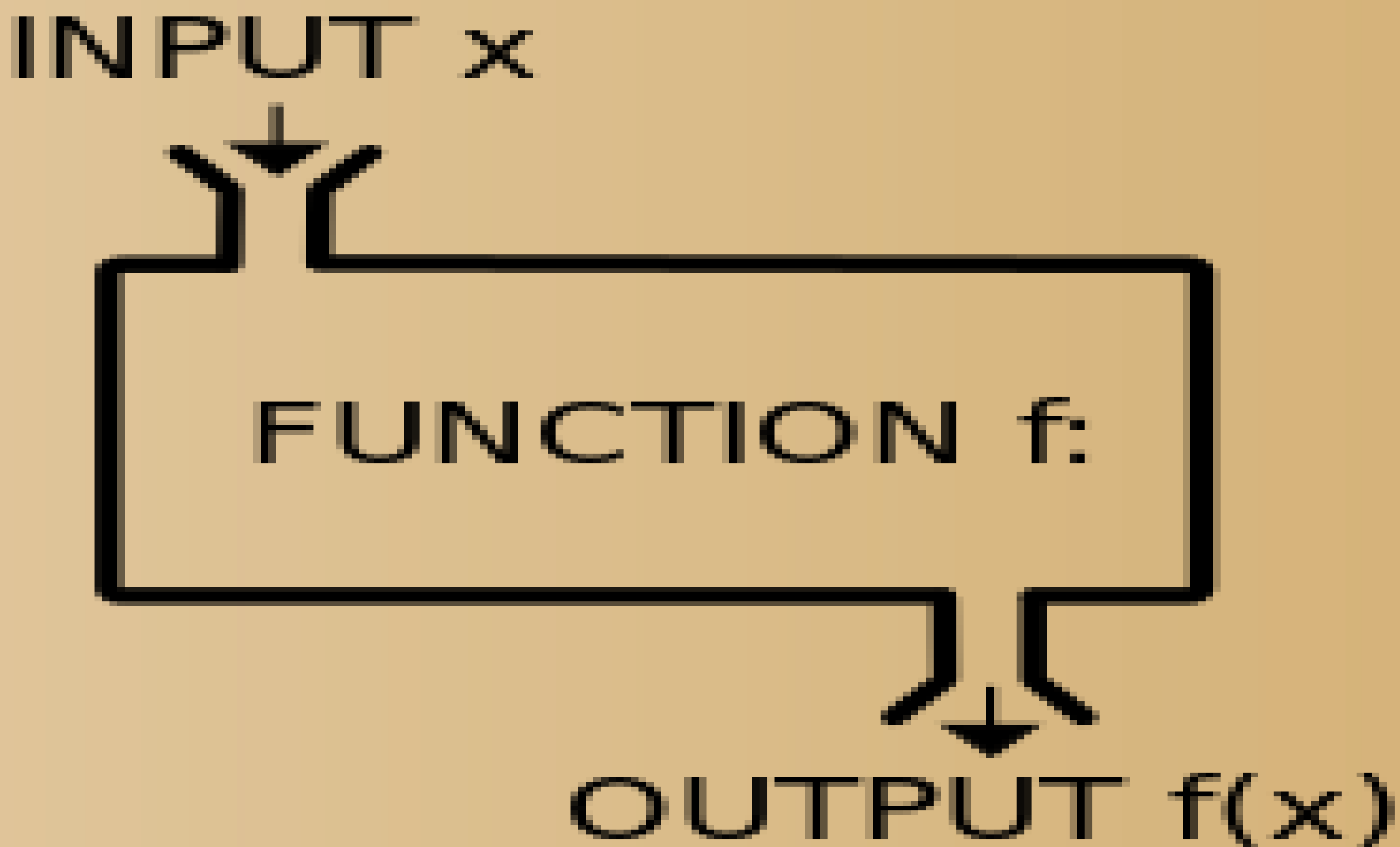
$$= -\frac{1}{2}\left(\log\frac{a}{x}\right)\log\frac{4a}{x} + \frac{1}{2^3}\frac{x^2}{a^2} - \frac{1\cdot 3}{2\cdot 4^3}\frac{x^4}{a^4} + \frac{1\cdot 3\cdot 5}{2\cdot 4\cdot 6^3}\frac{x^6}{a^6} - \cdots, \quad [0 < x/a < 1],$$

$$= \frac{1}{2}\log\left|\frac{a}{x}\right|\log\left|\frac{4a}{x}\right| - \frac{1}{2^3}\frac{x^2}{a^2} + \frac{1\cdot 3}{2\cdot 4^3}\frac{x^4}{a^4} - \frac{1\cdot 3\cdot 5}{2\cdot 4\cdot 6^3}\frac{x^6}{a^6} + \cdots, \quad [-1 < x/a < 0].$$

$$\int \frac{1}{x^p}\operatorname{csch}^{-1}\frac{x}{a}\,dx$$

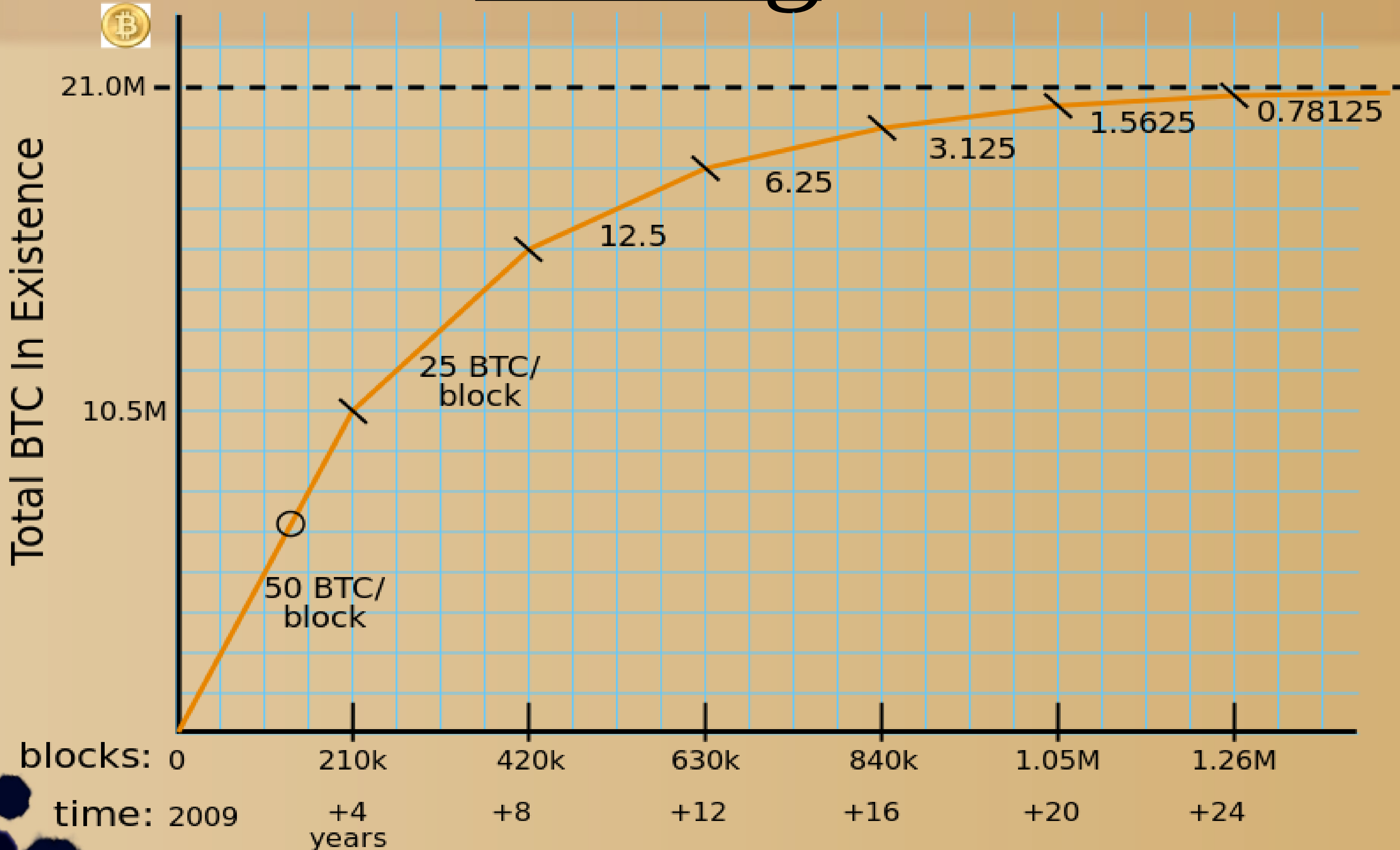
$$= -\frac{1}{(p-1)x^{p-1}}\operatorname{csch}^{-1}\frac{x}{a} - \frac{a}{p-1}\int\frac{dx}{x^p\sqrt{(x^2+a^2)}}, \quad [p \neq 1].$$

Mining



Mining

Mining

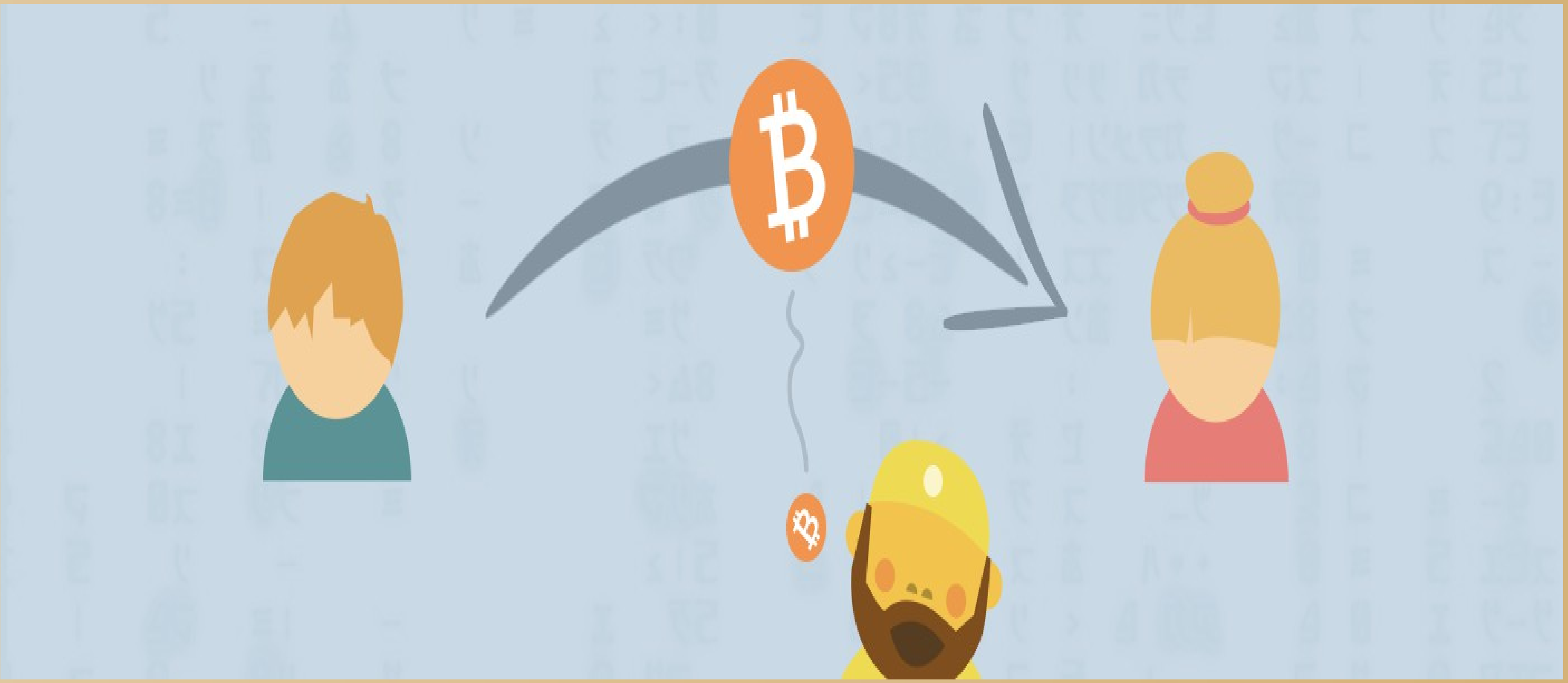

Total BTC In Existence
21.0M
10.5M
50 BTC/
block
25 BTC/
block
12.5
6.25
3.125
1.5625
0.78125
blocks: 0
210k
420k
630k
840k
1.05M
1.26M
time: 2009
+4
years
+8
+12
+16
+20
+24

Mining

Difficulty

Mining

Transaction Fees



Applications

Smart contracts

Applications

Smart property

Applications

Voting

Applications

Crowdfunding

Applications

Finance

What about Greece

What about Greece

Early adopters

Geek community

Completely decentralised

No central authority

Just enthousiasm and fun

What about Greece

Forums

BitcoinTalk.org

BitcoinHellas.com

Sites

bitcoinx.gr

bitcoin-gr.org

bitnews.gr

gr.newsbtc.com

What about Greece

Bitcoin Community Greece (Facebook & Twitter)

IRC : bitcoin-el

Slack : Bitcoin Greece

Greek Bitcoin exchanges

BTC Greece

Bitcoins Greece

What about Greece

Blockchain Hackathon

Meetups

Cooperations

2 ATMs

Thank you !!