

MONERIUM

Blockchains and the future of finance

Sveinn Valfells
ACTAI Iceland - CRYPTO CONFERENCE
Harpa, July 23, 2018



Team



Gísli Kristjánsson
Co-founder

Co-founder Appvise (smart DNS services in over 100 countries); Ethereum ICO investor; bond trader (Hf Verðbréf); BSc math (U of Iceland).



Hjörtur Hjartarson
Co-founder

Co-founder Appvise; Ethereum ICO investor; co-founder Kapital software; Commercial College (Iceland).



Jón Helgi Egilsson
Co-founder

Former chair and vice-chair, Central Bank of Iceland; Head of Capital Markets, Landsbanki; fintech co-founder (Mens Mentis); Mechanical engineer, BSc (U of Iceland), MSc (DTU). Adj prof finance (Reykjavik Univ); visiting scholar in economics (Columbia).



Sveinn Valfells, PhD
Co-founder

Investor, employee or advisor in biotech (Atlas, deCode, Ingenuity), telco (Vodafone.is), mobile (Dimon), VC (Arctic, IQ); first Bitcoin transaction 2011. Physicist BSc (Columbia) PhD (Boston), economist MSc (Stanford).



Árni Guðjónsson

Senior designer and developer in web and mobile applications at Det Norske Veritas, Germanischer Lloyd, National Oilwell Varco, Kapital. B.Sc. comp sci (U of Iceland).



Jón Gunnar Ólafsson

Associate (securities law and license applications), Lagahvoll. Mag. jur. (U of Iceland).



Eric A. Stubbs, PhD
Board of Directors

Senior Portfolio Manager, Royal Bank of Canada Wealth Management. Previously co-Head of Wealth Management Bear Stearns, Head of Strategic Investment Advisory Group and risk manager at J.P. Morgan. Economist, BA, MA (U of Toronto), PhD (Harvard).



Danielle Pamela Neben
Board of Directors

Founding Partner and Consultant at Maresías and affiliated with Fidelio Partners. 25 years in banking: 20 at HSBC in 7 countries, then Board Member of Landsbankinn and currently in the Boards of Meniga and Monerium. B.Comm (McGill University).



Magnús E. Björnsson, PhD
Chair, Board of Directors

CEO Men & Mice. Previously, Senior Director of Engineering, Oracle. BSc physics and comp sci (U of Iceland), PhD comp sci (Brandeis).



Gunnar Haraldsson, PhD
Advisor

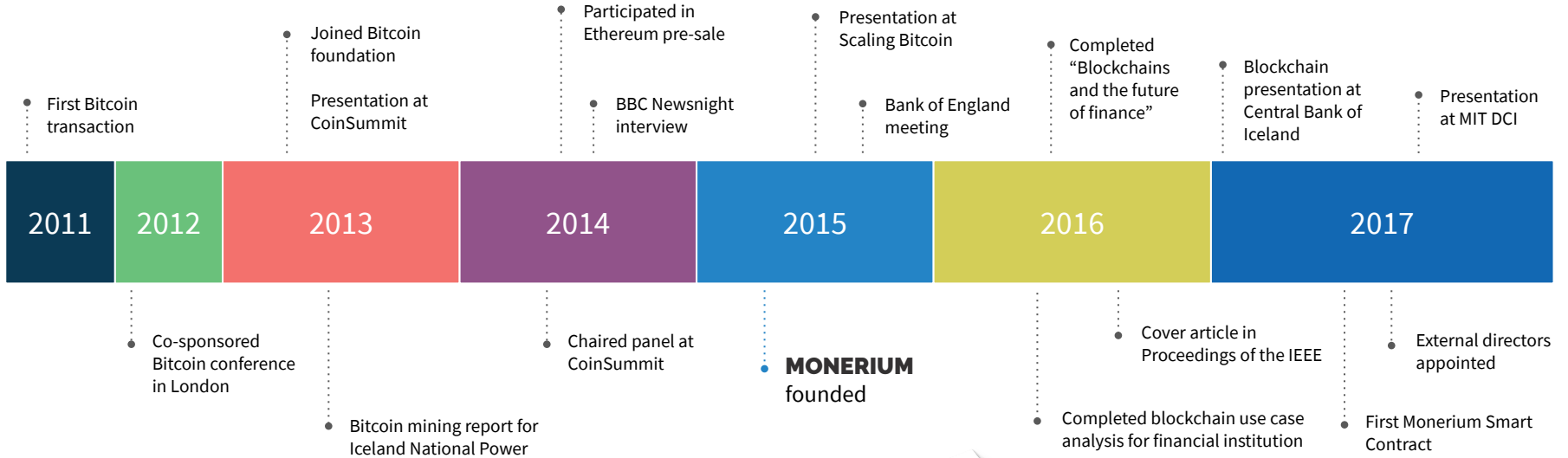
Former Chair Financial Supervisory Authority of Iceland, Director Inst. of Economic Studies (Univ. of Iceland), founder Intellecton. Economist B.Sc. (Univ. of Iceland), Ph.D. (Univ. of Toulouse).



Sigurður Örn Hilmarsson
Advisor

Barrister at the Supreme Court of Iceland, partner at Réttur, Previously at Laugardal Legal. Mag. jur. (Univ. of Iceland).

How did we get here?



Ledgers track economic transactions



Babylonian ledger, 1800 BC

2331. St. John Houblon Dr. Conto

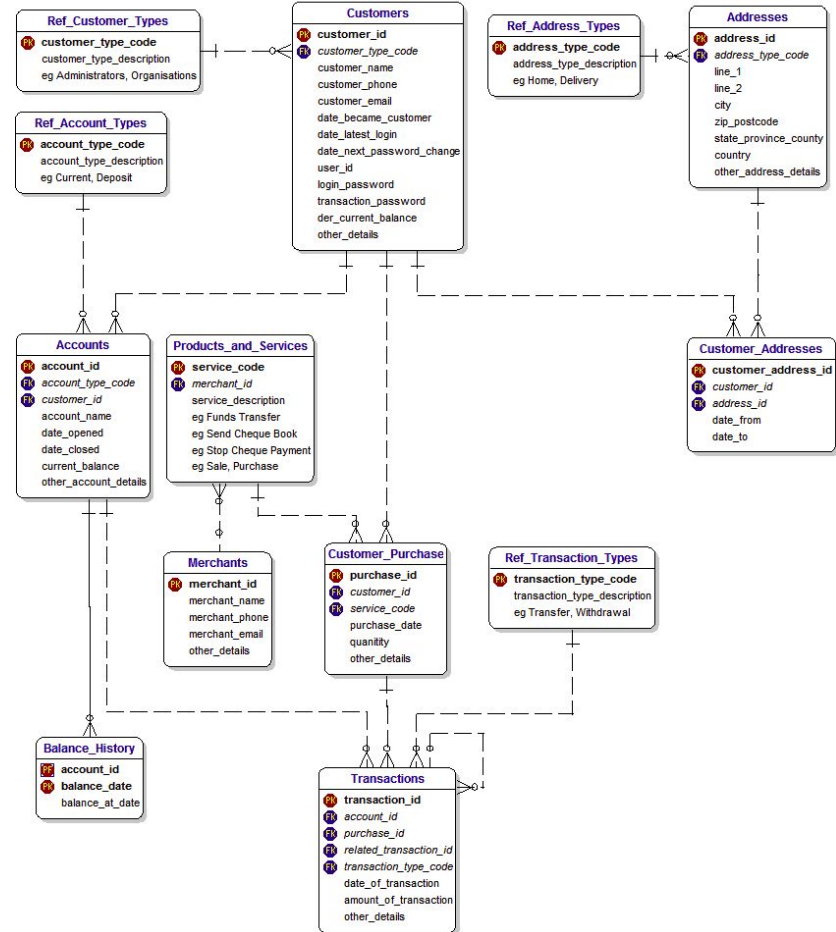
		1696		By his acco	
1696	To Cash	Nov 20	15	Nov 27	796
26776	Dr	12	400		
Dec 1 1697	Dr	Dec 1	125	Dec 1	751
2 906	Dr	1393. 6. 8	330		
700 0	Dr	1200	163	10	66
5 806	Dr		81	3	67
	Dr	1154. 16. 8	Nov 8	5	16
7 768	Dr		30	3	40
12 111	Dr	1329. 0. 4	2	14	215
14 814	Dr		210		
15 777	Dr		95	5	8
	Dr	1200	69	15	10
1655	Dr	1100	15		
1657	Dr	1100			
16 3166	Dr		80		
19 3226	Dr		1800		
	Dr	1283. 6. 8	14		
	Dr		170		
	Dr		112		

Bank of England ledger, 1696 AD

Modern ledgers are digital

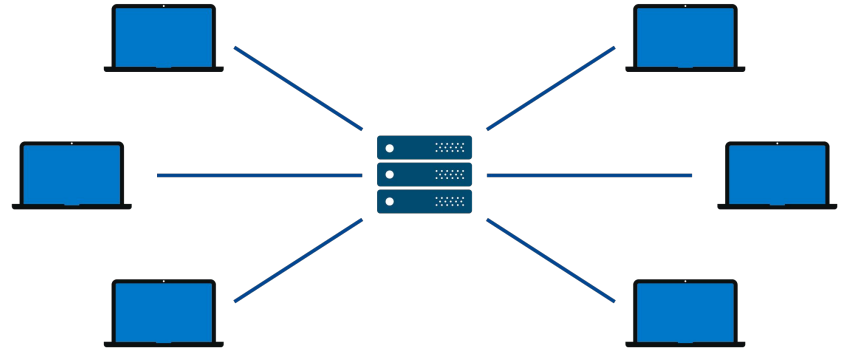
Databases extend ledgers to digital domain

- Relational structure
- Flexible queries
- Fast duplication
- Remote access



Digital ledgers are effectively centralized

- Centralized architecture and processes.
- Transactions channelled through central entities.
- Organizations maintain trusted ledgers (banks, exchanges, social networks, registries, etc)



Centralized ledgers require trust

To every thing there is a season

STOFNA 1913
274. útgáfa
20. október
Landspremið

Morgunblaðið

NÚLLIS
Alþýðutíðindi
Landspremið

FRÍÐJUDAGUR 7. OKTÓBER 2008

NEYÐARLÖG Á ÍSLANDI

- Alþingi samþykkti lög um fjármálaráðgjafi
- Fjármálaeftirlitið fær vottækir heimildir
- Skuldir bankanna eru þjóðinni ofviða
- Glundroði einkenni gjaldveyrismarkaði

Efendis líanarvottann eru farir að selja skuldabréf íslensku bankanna með allt að 60% afhöllum. Þeir horfa fram á mikið tap af lánum sínum.

Lífeyrisþjóðir sjá fram á að eignir sjóðanna eigi eftir að rýna umtalsvert. Hugsanlega munu þeir fresta áformum um að færa heim eignir sínar.

Ef illa fer fyrir einhverjum bankum á næstu dögum hefur það vottækir áhrif enda er búið fólk og fyrirtæki bluthafar í viðskiptabankunum.

Alger glundroði einkenni gjaldveyrismarkaði og erft var að sjá raunverulegt gengi krónunnar. Gengi evru fór upp í allt að 250 krónur í gær.

Eftir Egi Ólafsson
spjallmáttur



STJÓRNVALDIÐ grípu í gær til réttstans aðgerða í viðspagnunum sem grípuð hefur verið til í nýju þjóðarlausum. Með lögum sem Alþingi samþykkti í gær fékk Fjármálaeftirlitið (FME) vottækir heimildir til að taka eftir eignir fjármálaábyrgðanna sem ekki geta staðið við skuldabréggjafi.

„Þú hattir er raunveruleg, gjófr haldinn, að íslenska þjóðarbúið myndi, of allt færi á votta vög, segast með hókinnum inn í hennar og afsláttunni því þjóðarlausum. Engin ábyrgð ríkisstjórn telur fram til þjóðarinnar í sína trúnaði, því því því sjálf bankakerfi þjóðarinnar er af í línu. Þú áttir haldinn vott, ráðgjafi þjóðarinnar, ekki leyf.“ sagði Gísli H. Haarnadóttir á þessum ástundum í þjóðarlausum í gær.

Þegar þetta er umfangsmikill fjármálaábyrgðir til hanna íslensku bankanna er þér ekki óþarfi um að skattgjafendur og þjófnef þýðir tímaþundið hefur varðar þín stöðu íslensku þjóðarinnar í heild sinni til langrar framtíðar,“ sagði Gísli H. Haarnadóttir í þjóðarlausum.

Skuldabréf með 60% afhöllum
Eftendis líanarvottann eru farir að selja skuldabréf íslensku bankanna með allt að 60% afhöllum. Þeir horfa fram á mikið tap af lánum sínum.

Stærð viðspagnunanna hefur breytt mjög á skilningnum tína. Þú áttir haldinn vott, ráðgjafi þjóðarinnar, ekki leyf.“ sagði Gísli H. Haarnadóttir á þessum ástundum í þjóðarlausum í gær.

Stofna nýja banka

- Útlit fyrir að nýir bankar líti dagsins ljós í kjölfar alþjóðlegrar lausafjárþreppu
- Íðnaðarráðgjafi talar um „þröglótt“ Glitnis og segir Landsbanka hafa ssett áhlaupu

Eftir Agnes Magnúsdóttur og Póla Kristína Ágústsdóttir

Stjórnvaldið hefur verið að selja skuldabréf íslensku bankanna með allt að 60% afhöllum. Þeir horfa fram á mikið tap af lánum sínum.

A time to break up

Bitcoin: A Peer-to-Peer Electronic Cash System

Satoshi Nakamoto
satoshin@gmx.com
www.bitcoin.org

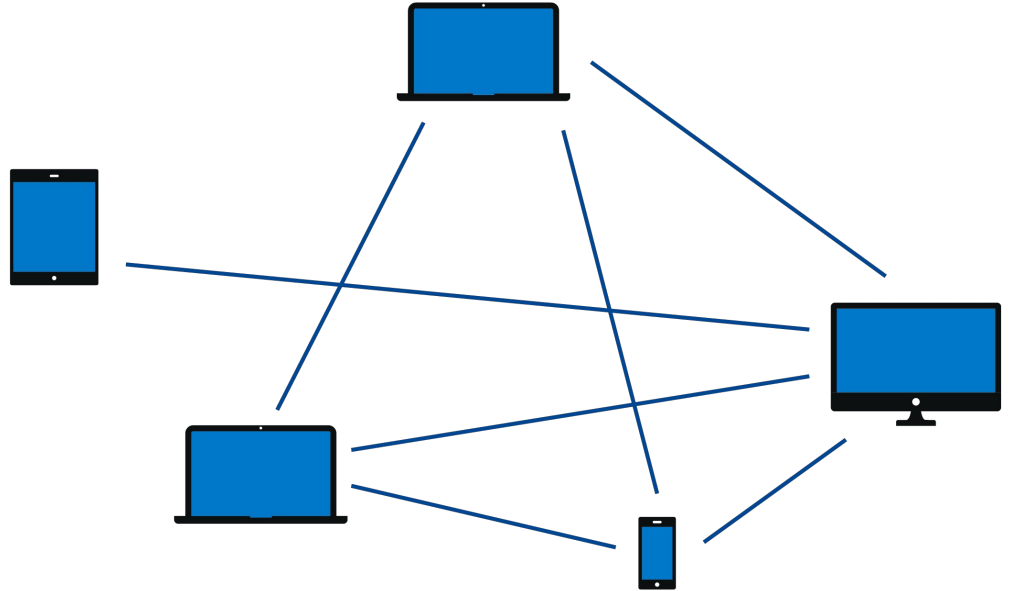
[31 October 2008]

Abstract. A purely peer-to-peer version of electronic cash would allow online payments to be sent directly from one party to another without going through a financial institution. Digital signatures provide part of the solution, but the main benefits are lost if a trusted third party is still required to prevent double-spending. We propose a solution to the double-spending problem using a peer-to-peer network. The network timestamps transactions by hashing them into an ongoing chain of hash-based proof-of-work, forming a record that cannot be changed without redoing the proof-of-work. The longest chain not only serves as proof of the sequence of events witnessed, but proof that it came from the largest pool of CPU power. As long as a majority of CPU power is controlled by nodes that are not cooperating to attack the network, they'll generate the longest chain and outpace attackers. The network itself requires minimal structure. Messages are broadcast on a best effort basis, and nodes can leave and rejoin the network at will, accepting the longest proof-of-work chain as proof of what happened while they were gone.

A time to rebuild

Blockchains are distributed ledgers

- Peer-to-peer transaction transmission and processing.
- Peer-to-peer updates of distributed ledger (consensus).
- Permissioned or permissionless participation of users and Validators.
- Trust is enforced through blockchain protocols.



Blockchain uses public-key cryptography

- Widely used in securing communications.
- Permissionless key generation.
- Pseudo-anonymous transactions.
- Transaction authenticated by scripts.
- Features range from multi-sig transactions to autonomous smart contracts.

Private Key



**E9 87 3D 79 C6 D8 75 C0
FB 6A 57 78 63 33 89 F4
45 32 13 30 3D A6 1F 20
BD 67 FC 23 3A A3 32 62**

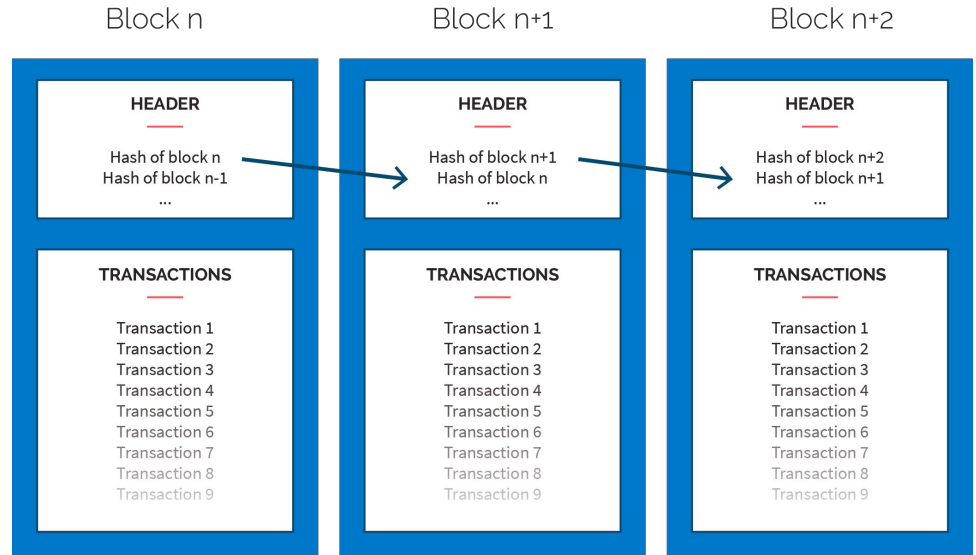
Public Key



**1j2m5TakK99HvJUT
fg2b2b8EGWQenmdTh**

Consensus secures blockchain

- Consensus established by cryptography, proof-of-work or Byzantine agreement.
- Validators (miners) compute hashes for or sign new blocks.
- Validation can be permissioned or Permissionless.
- Cost and time of double spending prohibitive.



Blockchains are new financial networks

- WWW and mobile changed media, communication
- Blockchains will change finance

Anyone can build new products on top of blockchains

- Money is now programmable (scripts, dApps)
- For the first time possible to send money like email

Bitcoin: A P2P payment system and a new asset class

- >\$120b market cap
- >\$200b annual transaction volume

Ethereum: A P2P platform for smart contracts

- >\$50b market cap
- >1M daily transactions

Both public and private sectors are embracing blockchains

- Ethereum
 - Ethereum public blockchain
 - Ethereum Enterprise Alliance backed by Microsoft, Amazon, Accenture, JP Morgan, and others.
- Hyperledger
 - Run by Linux Foundation, backed by Intel, Oracle, IBM, State Street, NEC, and others.
- R3
 - Backed by global banks including, Barclays, BBVA, Commonwealth Bank of Australia, Credit Suisse, Royal Bank of Scotland, State Street, and UBS.
- Bank of Canada
 - Simulated wholesale payment system
- Bank of England
 - Blockchain research since 2015
- Federal Reserve
 - “public and private currencies can coexist”
- State of Illinois
 - Illinois Blockchain Initiative
- Malta
 - Task force to advise on national blockchain strategy
- IMF
 - Considering “Crypto Drawing Rights”

Major jurisdictions are removing regulatory uncertainty

EEA

- Bitcoin exempt from VAT by EU Court of Justice ruling 2015
- EU AML directive amended to include virtual currencies, 2017.

USA

- FinCEN guidance on virtual currency issued March 2013
- FBI confiscated bitcoins from Silk Road, October 2013
- All major exchanges perform KYC/AML

Japan

- Virtual currency act in 2017
- Bitcoin recognised as payment method
- Virtual currency exchanges subject to KYC/AML

“Public and private currencies can coexist.”

James Bullard, Federal Reserve, Consensus NYC 2018

Iceland can benefit from blockchain adoption

Diversification of industrial power consumers

- “Mining” consumes >100MW, rapidly growing.
- Less polluting, more profitable than heavy industry, creates skilled jobs.
- Can replace existing heavy power users without requiring additional capacity or subsidies

Upgrade of financial infrastructure

- Improve profitability of state owned banking sector
- Foster environment for next-generation fintech

Streamline government services

- Link public asset ledgers to blockchains, car register, quota register, real estate register ...

Blockchains will reshape financial services

- Renaissance of private currency
 - Crypto- and fiat currencies will coexist
- Emergence of new commercial networks
 - Blockchains enable new commercial networks and models
- “Programmable money”
 - Customizable financial services
- Unbundling of financial services
 - Separate service providers for deposits, lending and payments
- Reduction in systemic risk
 - Shift away from “too big to fail”, dilution of existing monoculture



MONERIUM
money on blockchains

Q&A