Mark Mueller-Eberstein
Rutgers University
The Innovation Economy Institute
CEO of Adgetec Corporation
@MarkMEberstein

Adgetec Corporation
Your Advantage – Our Mission

WeChat: MarkMEberstein

The Next Radical Internet Transformation: How Blockchain Technology is transforming Business, Governments, Computing and Security models

"WHAT IT IS" AND HOW EVERYTHING COULD BE DIFFERENT

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  - Flagship *Communications of the ACM (CACM)* magazine: http://cacm.acm.org/
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In the early 1990s...

We were discussing if the internet will impact mail service organizations

Nobody thought about shopping, entertainment or finance

CHANGE

Tomorrow will be very different...

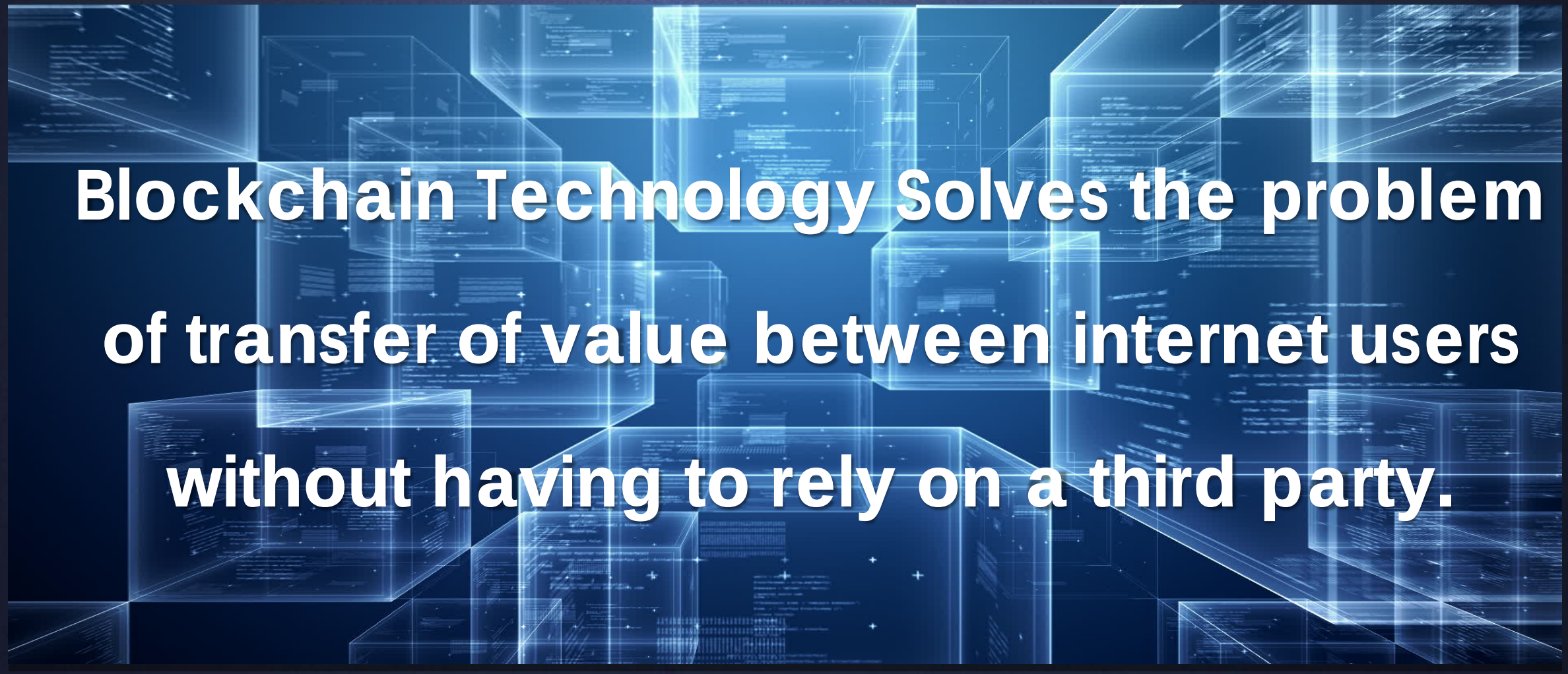
The world changing faster and faster

Flexibility is necessary for success

Collaboration and knowledge sharing are essential

Revolution !

From the industrial age to the Innovation Economy


Blockchain Technology Solves the problem
of transfer of value between internet users
without having to rely on a third party.

New Economic models previously impossible before the emergence of bitcoin distributed ledger

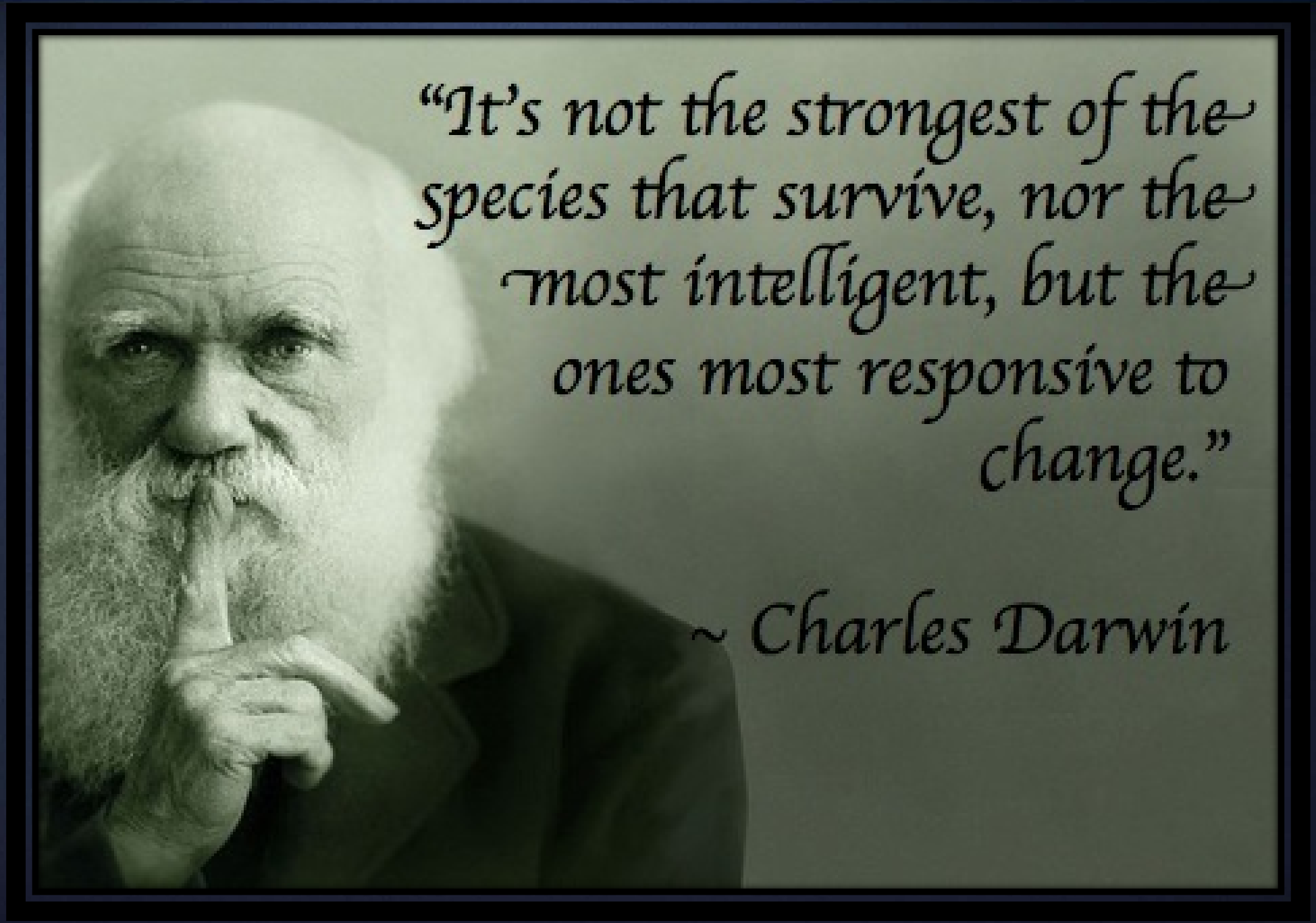
"Cryptoeconomics" can provide the underlying economic principles that empower the fast scaling, shared economy demanding new banking models.

Blockchain Tech beyond currency and financial industry...

... Think any kind of transaction and related services...

Radical transformation:

what we thought was fixed and unchangeable will change



Of the 7 billion people in the world…

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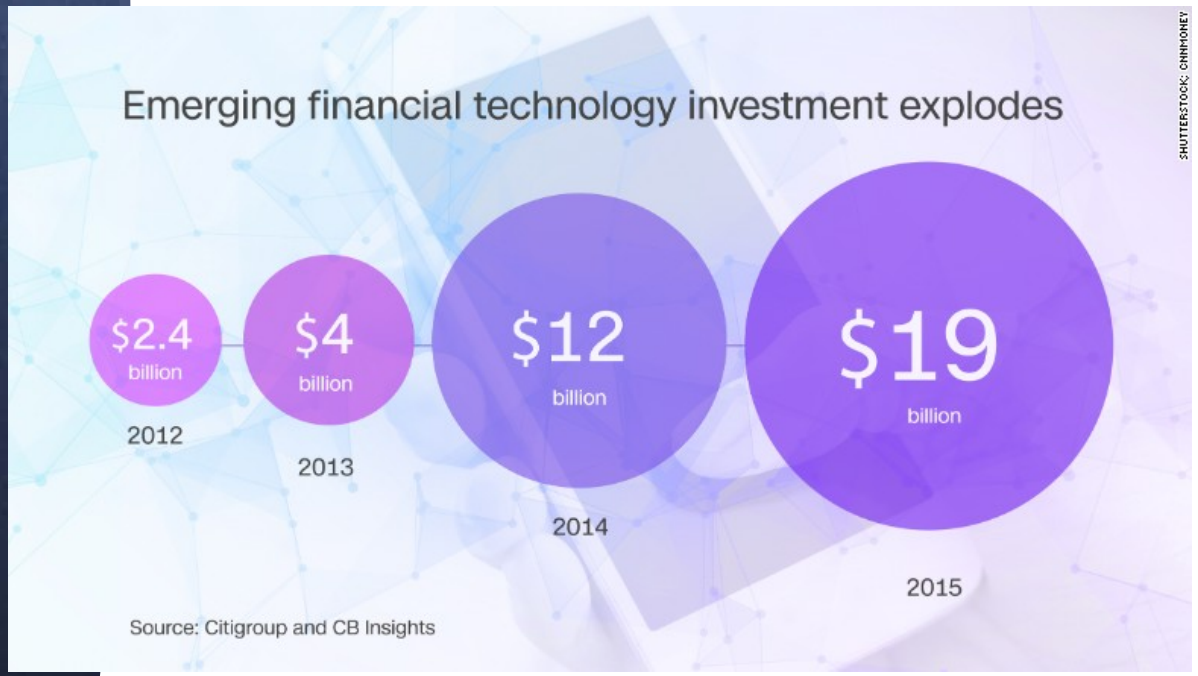
But only 20% (1.4B) have currently access to the banking system

Where investment goes...

Warren Mead
Global lead of KPMG's FinTech practice:

"Global FinTech Investment in 2015 was $19 Billion (up from $12 Billion in 2014)"



"Fintech is forcing banking to a tipping point"
Citigroup

“The banking industry's Uber moment”
Former Barclays (BCS) CEO Antony Jenkins

→ FinTech is the Change Agent for financial services.

FinTech?

“It is changing products, processes and our people”

Atul Varde, EVP & CIO at Affinity Credit Union, Canada

Affinity Credit Union

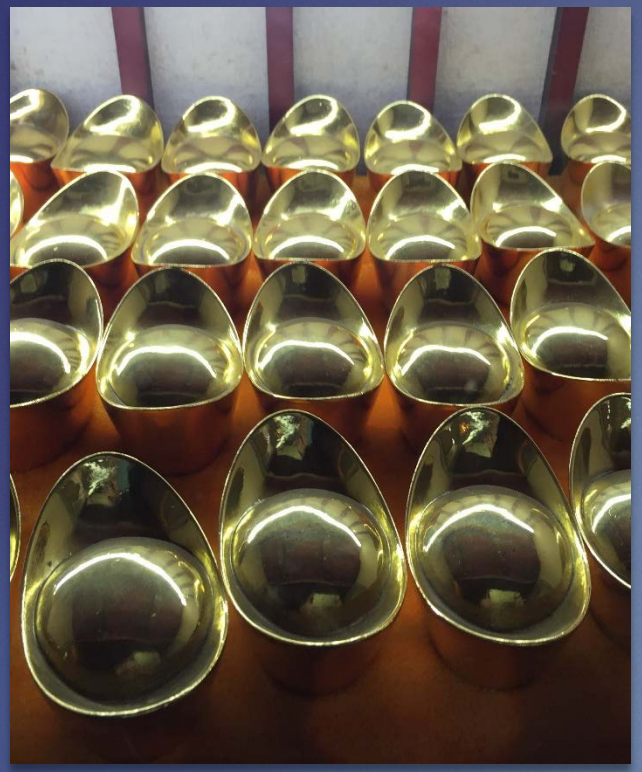
Key areas for FinTech:

- Remittances (TransferWise)
- Lending (LendingClub, OnDeck)
- Community engagement (GlobeOne; part of interest for local social good)
- Online First (Earnest, SoFi, Osper, Number26)
- Insurance
- Mortgages
- Investment
- Peer-to-Peer

Some things never change....

When there is money... some people try to steal it...

Protection is key!



Money evolves… and so do the threats

Bitcoin vs. Blockchain

- Bitcoin is (currently the best know) usage of blockchain technology
- One of many digital currencies using blockchain technology
- Many more uses for blockchain technology other than “currency”
- Why digital currency is used?
  - No need to use exchange (e.g. banks) for people who know/use Bitcoin
  - Direct exchange between individuals is possible

“Every inefficiency in a system will be removed (by technology) sooner or later.”

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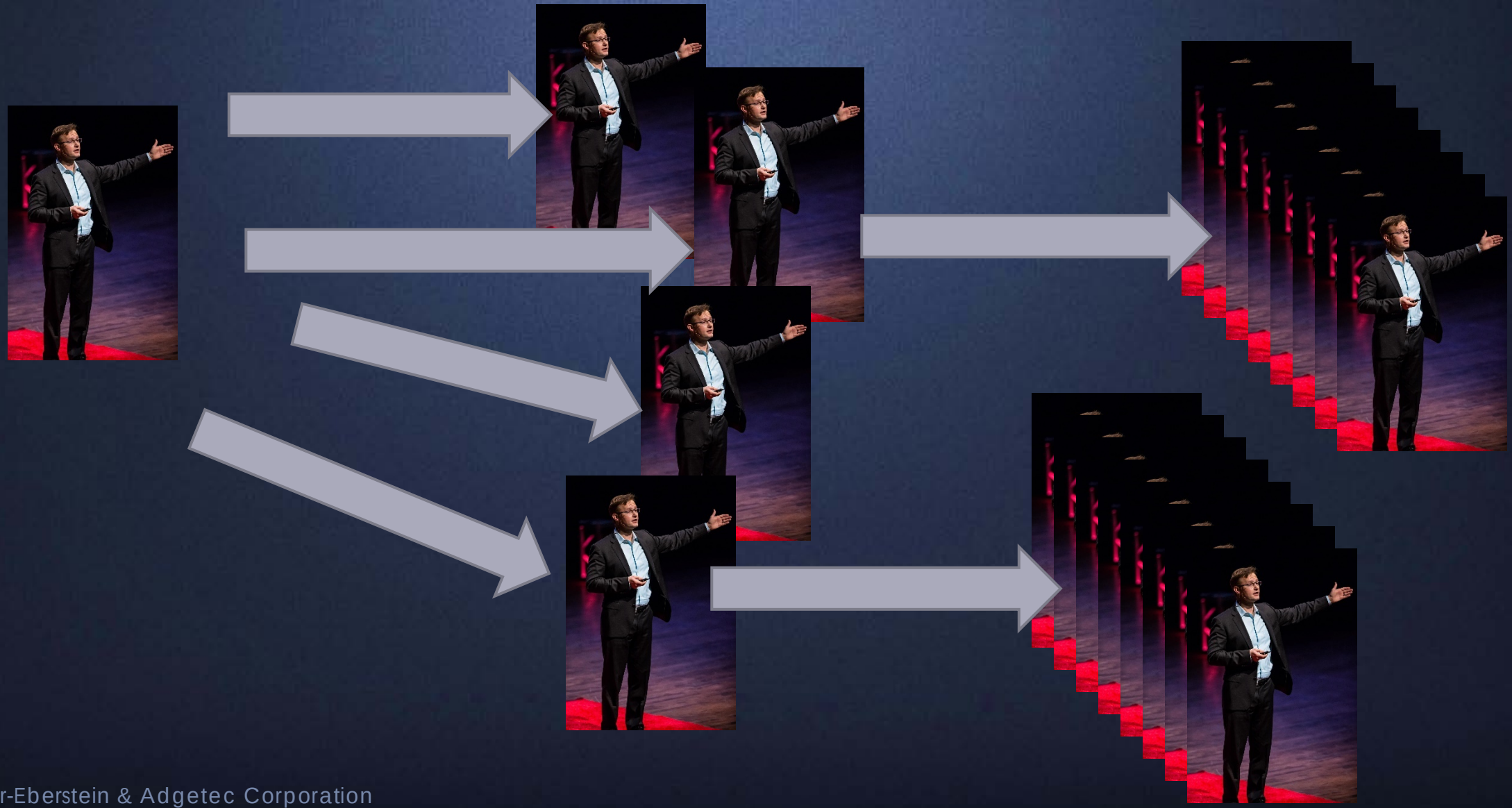
New business models

Sharing Economy
(Ueber / Didi; AirBNB)

Peer-to-Peer Financing
(LendingClub; Kiva)

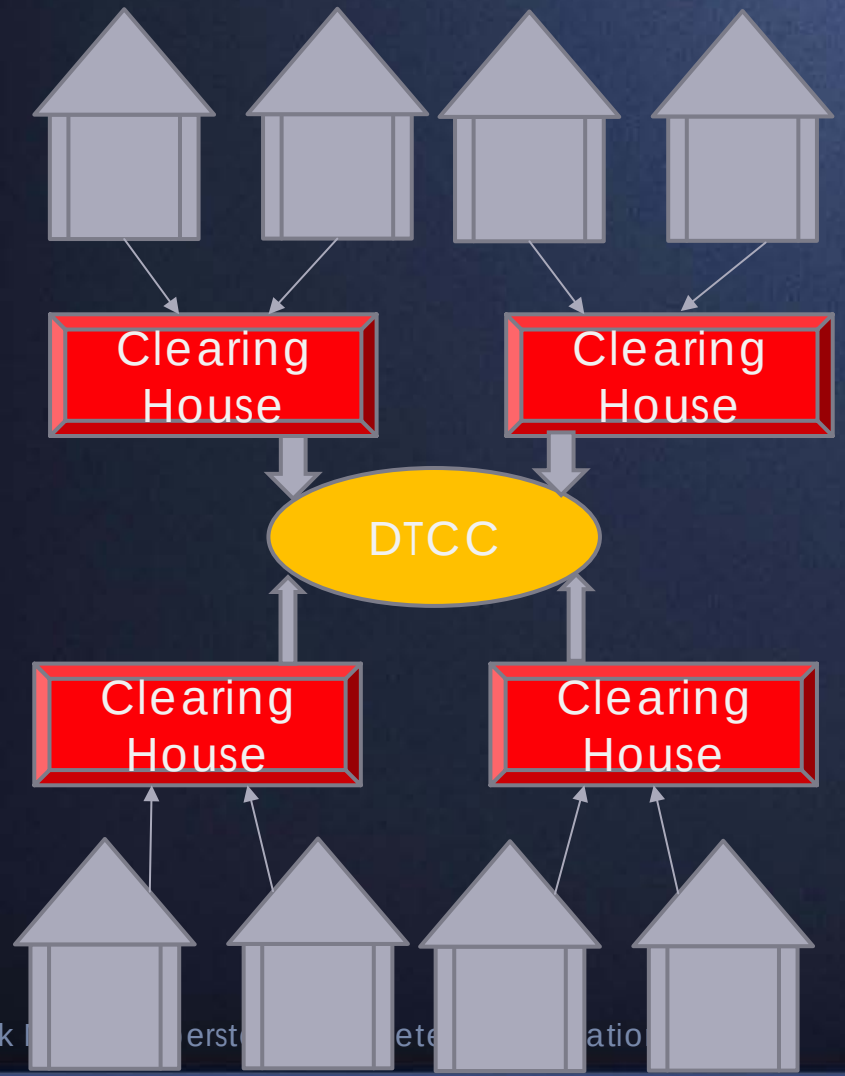
What does a blockchain do....?

Imagine a Digital Picture....



Creating a unique Digital Asset

Blockchain vs. Traditional Settlement Process



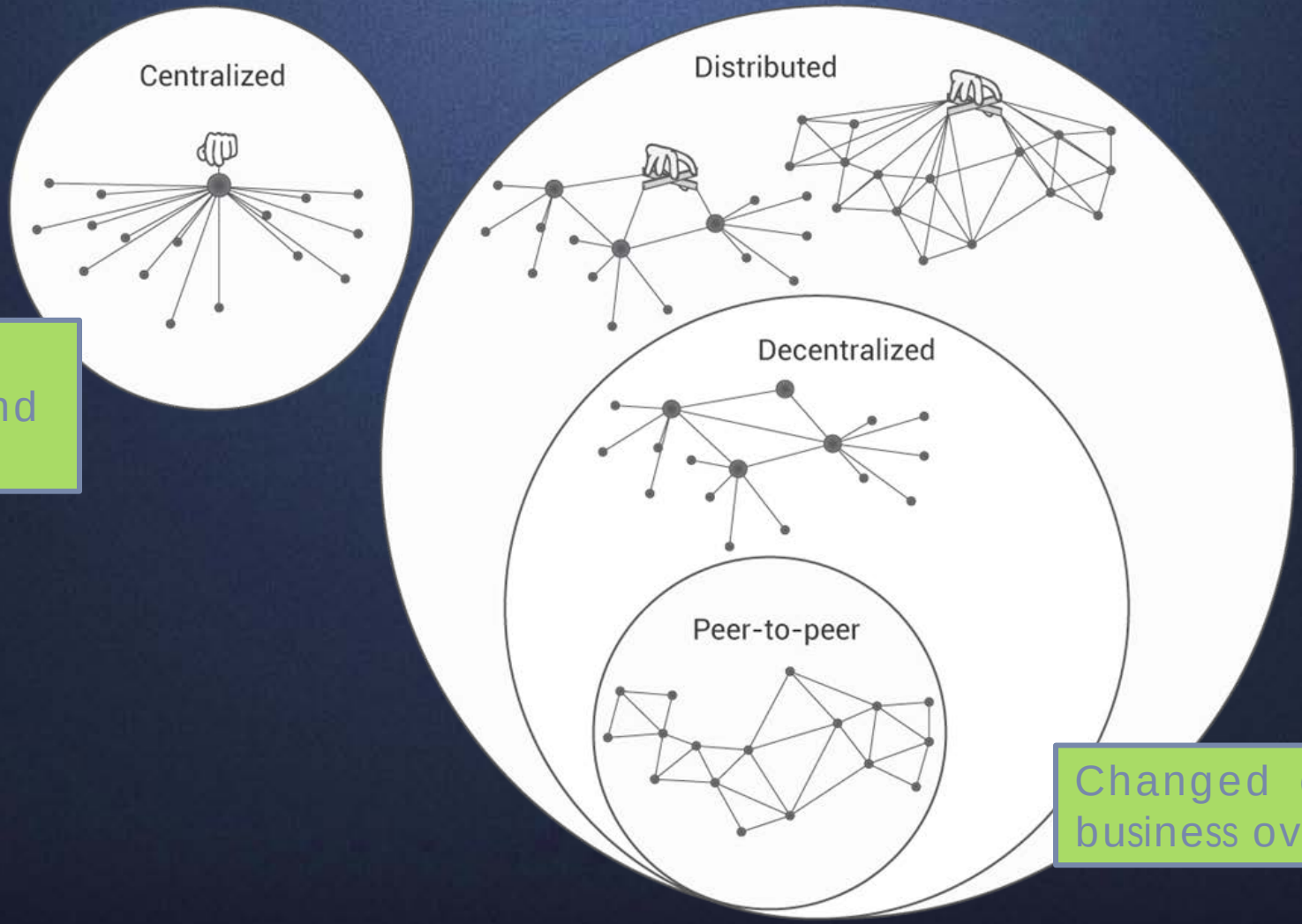
Blockchain is ultimately about Collaboration

“...Emerging technology like blockchain will be a game changer only if they achieve a network effect, which means we need to work together to establish standards.“
-- Suresh Kumar, BNY Mellon, CIO

"As with any early-stage, highly-complex technology that demonstrates the ability to change the way we live our lives and conduct business, blockchain demands a cross-industry, open source collaboration to advance the technology for all."
— Jim Zemlin, Executive Director, Linux Foundation

The “technical stuff”…

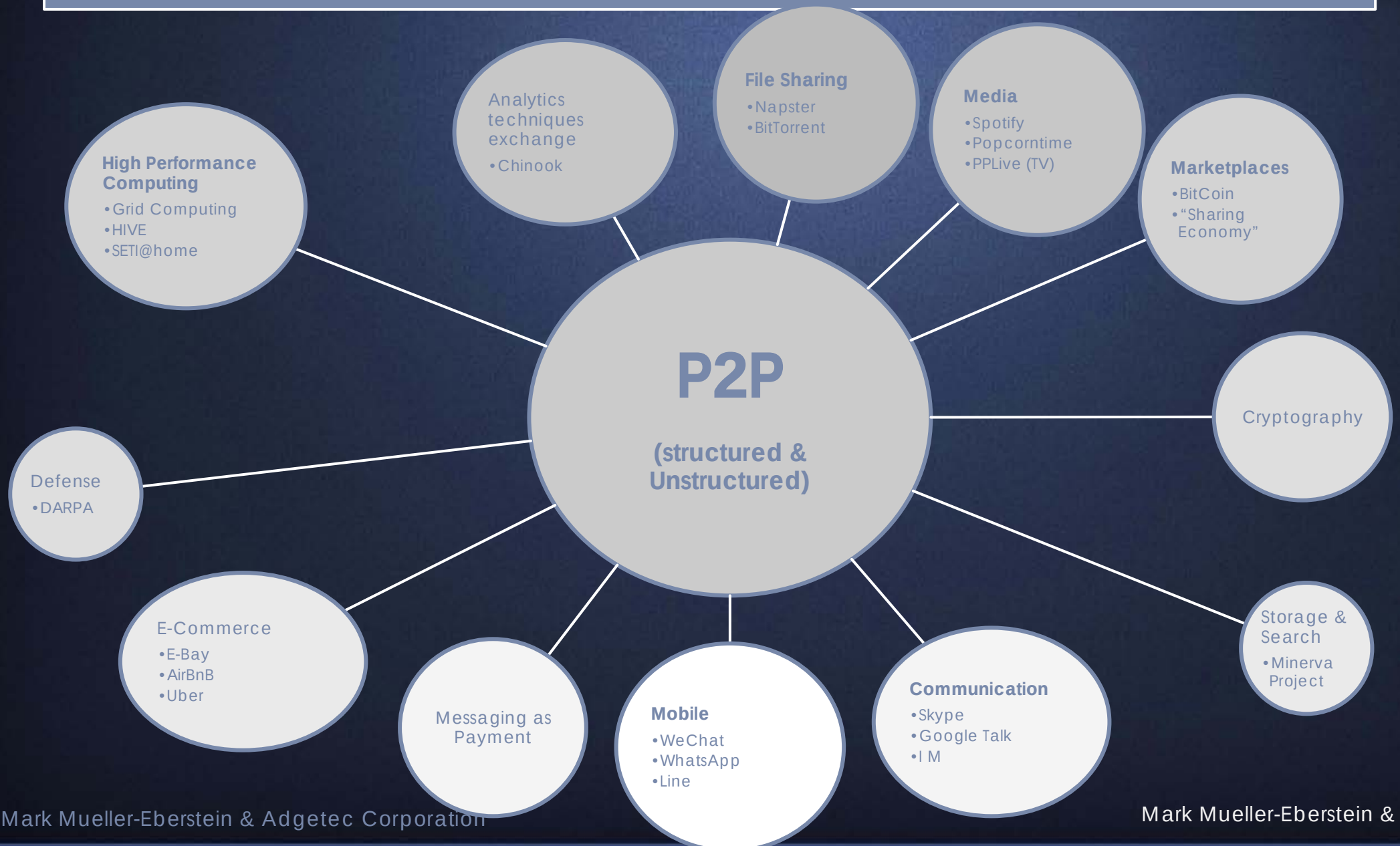
Networking....



Old school computing and business

Changed computing and business over the last 20 years

Peer-to-Peer (P2P) Networking is everywhere



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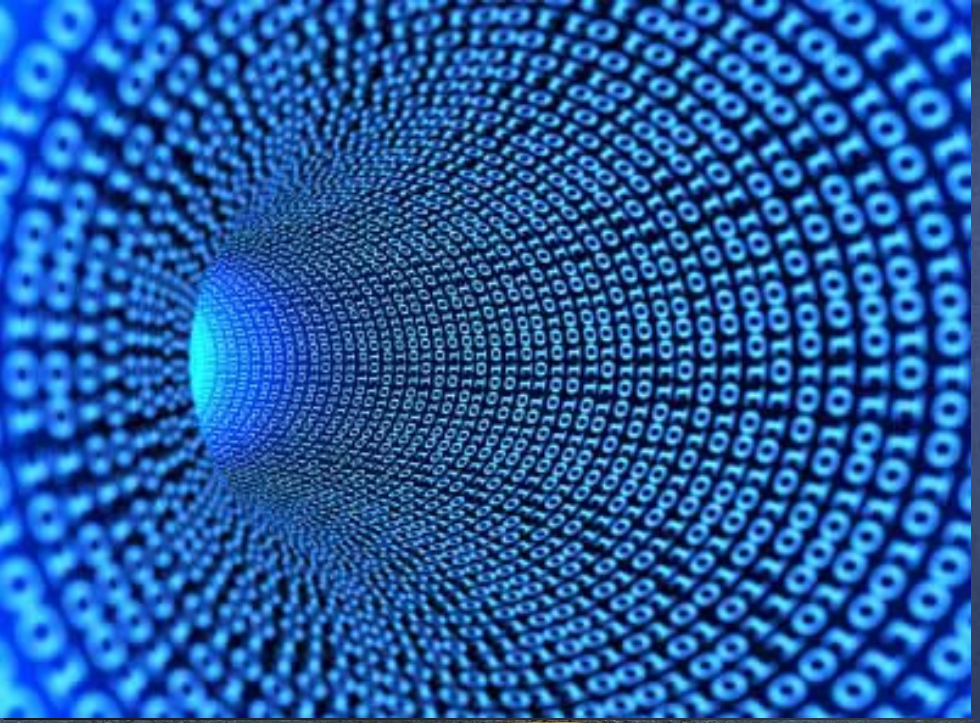
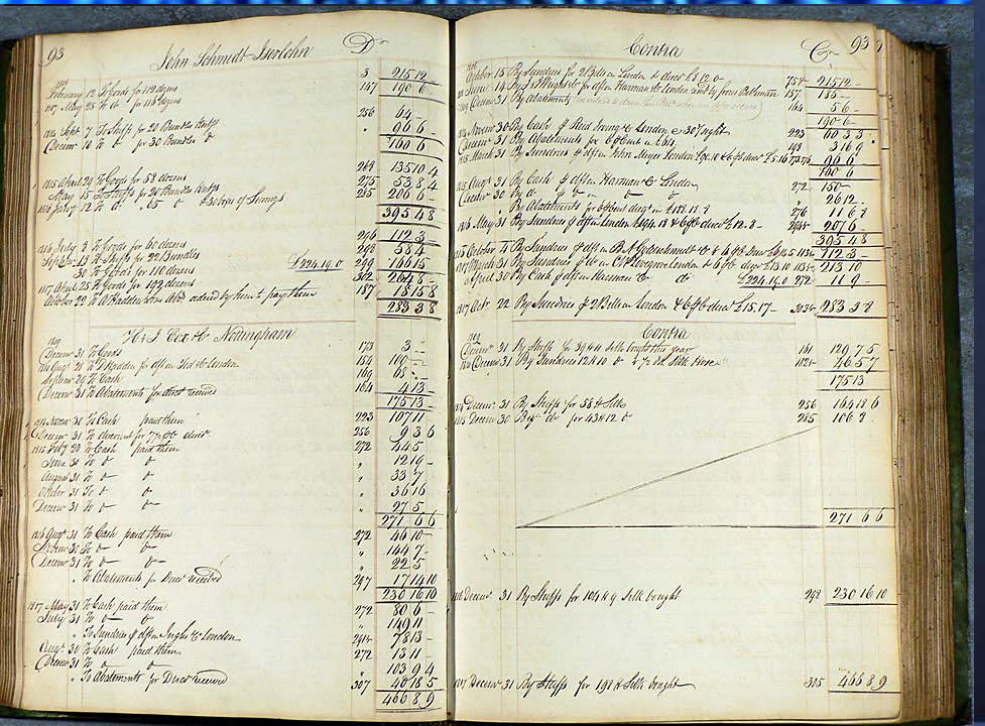
Many commercial or government services are basically “databases” that are centrally owned and managed.





Transactions are recorded in a “Ledger”

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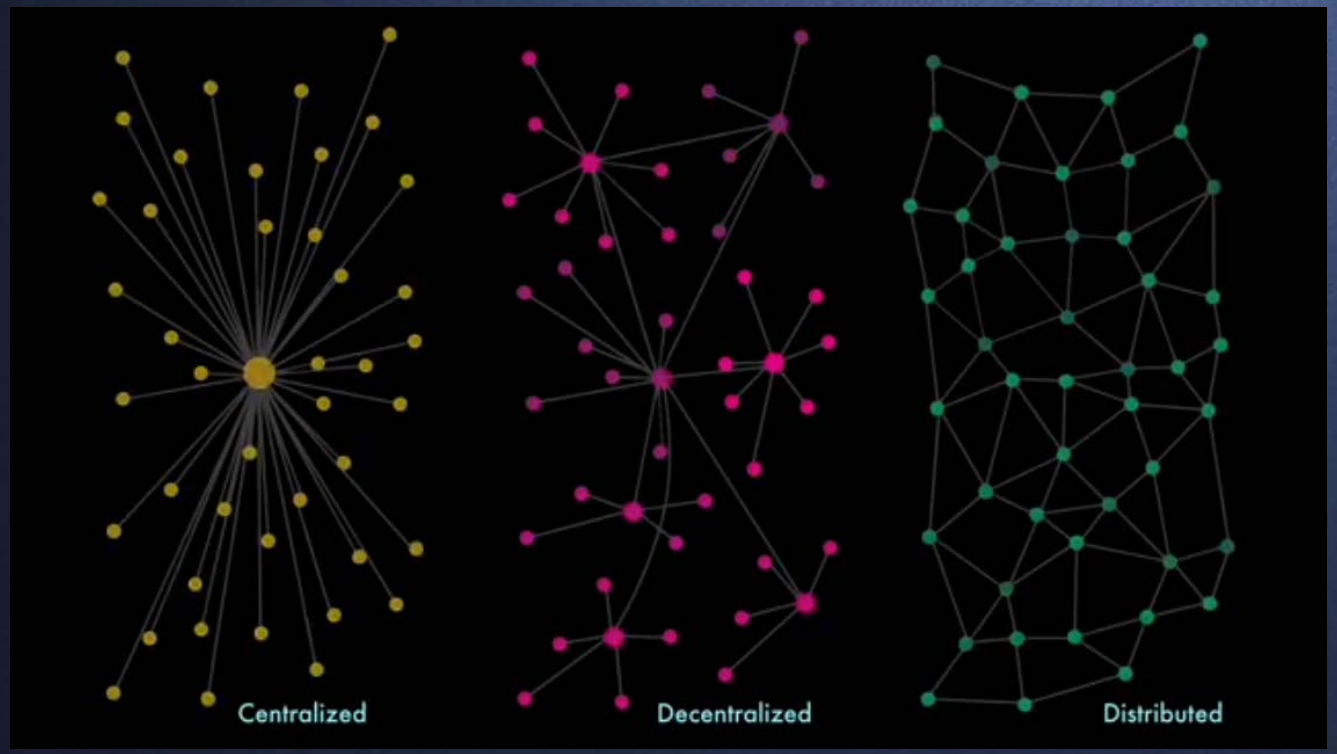


Central Control = Central Point of Failure

Blockchain technology allows a distributed ledger vs. a centrally managed ledger.

All transactions within a block are recorded and visible. And can never be changed (“Immutable”).

Blockchain without a “token” is just a database

Benefits of Blockchain secured distributed leger vs. central ledger

- Information can be put on block chain and can never be changed
- Worldwide ledger: IP, land titles, art,...
- Full transparency for every transaction
- "Record every information forever"

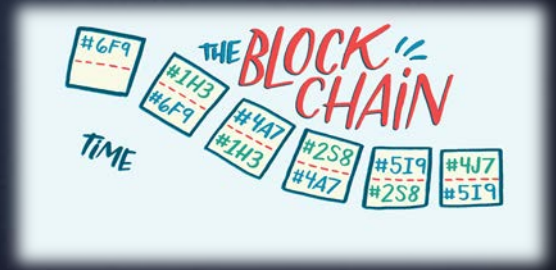
Blockchain Technology: Peer-to-peer network, secured by cryptography and proof-of-work

Blockchains: **Public / Open** **“Private”** **Government**

Some Blockchains:

bitcoin, ethereum, litecoin, dogecoin, R3, Citicoin, DRAGONCHAIN, e-Estonia The Digital Society, 中国人民银行 THE PEOPLE'S BANK OF CHINA

Some Crypto Currencies:



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Blockchain Technology allows old and new players to offer new services to their customers

At least $1.7 trillion in “inefficiencies” up for grabs…

The Economist, 2014

And that is only the banking system...

Think any kind of transaction and related services...

… for example….

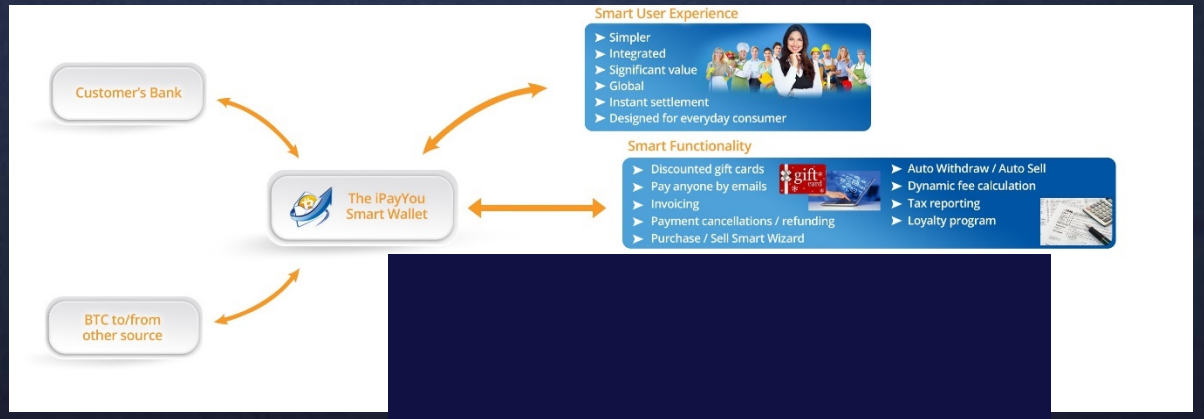
- Records of estates
- Records of shares
- Any financial transaction
- Voting
- Domain control (DNS)
- Central Trust (“Escrow”) for any kind of deals
- Messaging (“signed and unchangeable”)
- IP management
- …

Paying Amazon and Starbucks with Bitcoin

iPayYou
Bitcoin. Made. Simple.

STARBUCKS COFFEE

amazon



Global organization with lots of different business units, secure IoT and logistics needs

Even Disney does (their own, open source) Blockchain

DRAGONCHAIN

Governments and Blockchain Technology

APEC

Estonia

Washington State

China

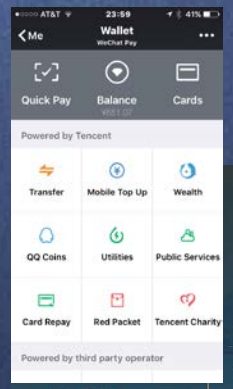
Regulations and restrictions?

From an economist perspective: Every restriction (and forced inefficiency) comes with a cost.

Lets be clear who carries the cost and if that is in the best interest of an economy and society.

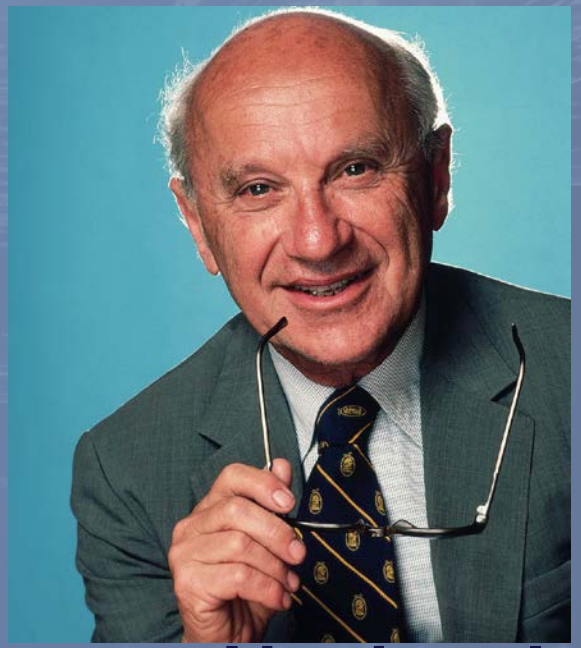
Shenzhen as Blockchain Tech capital

- Government support
- PBOC HQ for digital currency
- Test run of China's digital currency
- Tencent (WeChat pay)
- Huawei (Cloud and Network)
- Pingan Group, China's Merchants Bank, Dacheng Fund
- Bitbank HQ (e.g. top tier miner)
- Universities: teach blockchain
- RMB devaluation
- Hong Kong compete
- Strong positon in emerging markets



"Digital Currency Experimentation Zone"

Milton Friedman:



“Eventually, there will be a digital value system beyond the nation state.”

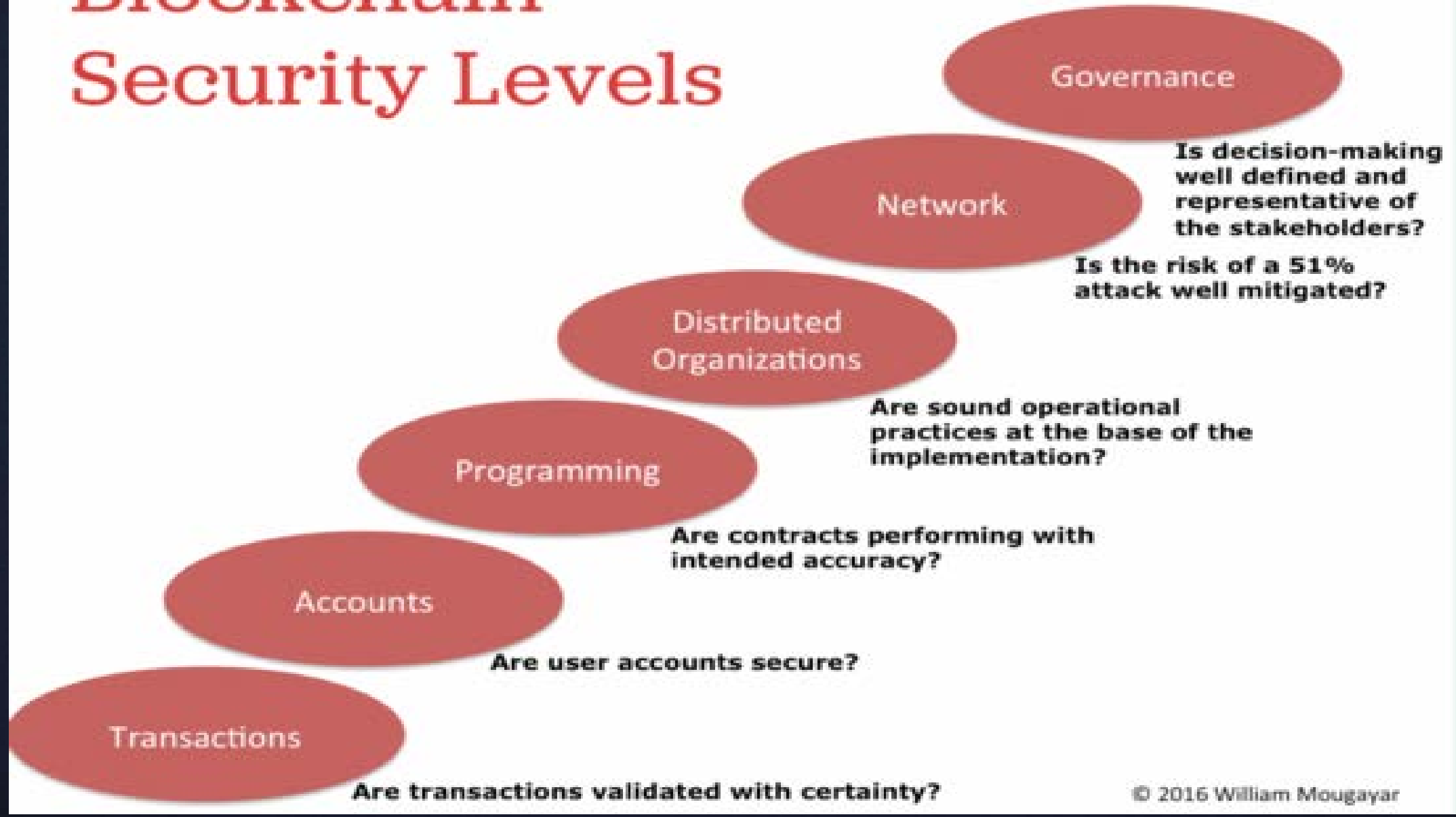
Which one is it going to be?

- Bitcoin?
- Ethereum?
- “GS coin”?
- Any other alt-coin?
- PBOC – coin ?

Security?

- Distributed ledgers and Blockchain technology create unparalleled opportunities, paradigm shifts and risk.
- (Some) Risks areas:
  technology, business, society and government
- Cyber-currency and cyber-technology go hand-in-hand as the internet evolves.

Blockchain Security Levels



Transaction Level

Minimum requirement.
A well functioning blockchain needs to validate transactions with certainty and predictability at the end of the consensus cycle.
Consensus method: confirming the transaction finality and immutable.

Status: Pretty good. Work is required on the other levels
Initial compliance applications available
(e.g. Elliptic: independent monitoring capabilities to combat insider trading, fraud, and money laundering)

Account Level

A) Self-managed user account (through private wallet)

- Could be a hosted account at an exchange
- Bitfinex hack: Example of a hosted account hack. Accounts were compromised on the exchange.
- DAO replay attacks touched some DAO private wallets. “Clients” are vulnerable to Internet style DoS or phishing attacks.

B) Hosted exchanges and wallets providers

- Need to become really good at it.
- Think “Facebook.” Facebook is not the Web. It is a walled garden, but it works well and it is arguably more secure than the Web at large.
- iPayYou.io as example

Programming: DAO lessons

DAO:
- digital Decentralized Autonomous Organization
- Form of investor-directed venture capital fund.

"The blockchain allowed us to program money, and we need to be careful in doing it. "

- June 2016: Hackers exploited a vulnerability in the DAO code to enable them to siphon off one third of The DAO's funds to a subsidiary account.
- July 2016: the Ethereum community decided to hard-fork the Ethereum blockchain to restore virtually all funds to the original contract.

Highly Controversial:
- Led to fork in Ethereum (original unforked blockchain was maintained as Ethereum Classic)
- Breaking Ethereum into two separate active cryptocurrencies

Distributed Organizations Level

- DAO example (not at the smart contract level)
- Distributed Organization that wants to be autonomous.
- Spaghetti topology of smart contracts labelled as “law” at the operational and organization level,
- Autonomy has its risks →
- Organization itself must be tested and it must be sound before it gets a chance to run autonomously.
- The DAO relied only on technical curators, but didn’t have organizational experts

Network Level

- Blockchain is physically and virtually a peer-to-peer network
- Network runs on consensus methods
- “51% attack” vulnerabilities
  - Theoretically, an attacker can spend enough money and hash power to “hijack” the transaction validation process in their favor.
  - Discussions on soundness of the actual algorithms, protocols, incentives and consensus economics (whether mining or transaction costs related).

Governance Level

- Differentiating governance level security from the network level security
- Public vs Private Blockchains
- Decentralized consensus
- Very early stage – limited lessons
- Strategic decisions taken in the name of decentralized governance affect the long term security of a blockchain.
- Public governance examples:
  - Bitcoin (block size) - Too rigid?
  - Ethereum (hard fork) Too lax?

How “real” is blockchain technology?

- Goldman-Sachs invest $500+ Million
- Microsoft declares “blockchain” as one of the key “must win” workloads for their Azure platform and business
- R3 group (banks) use for bond trading (9/2016)
- Hottest topic at #FIF2017
- 15% of top global banks intending to roll out full-scale, commercial blockchain products in 2017 (IBM survey)
- Some governments invest into developing their own “local” blockchains

What is holding Blockchain adoption back?

- Difficult to understand
- Difficult to use
- Difficult to buy in (“onramp”)
- Perception of risk
- Perception of “illegal”
- ……
- DIFFICULT TO SEE THE VALUE FOR THE INDIVIDUAL

Blockchain Technology in 2017 and beyond

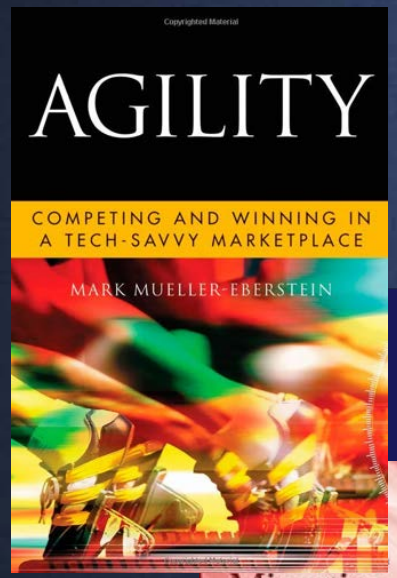
- Blockchain technology is revolutionizing the world **economy**
- **Trust** is established through peer-to-peer mass collaboration and sophisticated computer code rather than through a central powerful institution (bank or government)
- Changing transactions and interactions in finance, business, international collaboration and government's tool chests
- Agile organizations create completely new transaction and business models of value creation and distribution
- Chinese players will be driving innovation

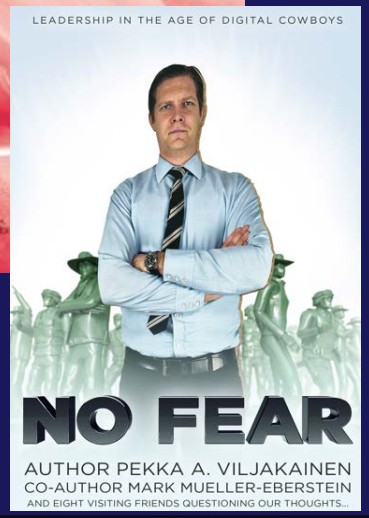
The Blockchain revolution is here.
→ Your Opportunity!

- Change will be fundamental on business, technology, processes, structures and people
- Technology & customer oriented leaders are positioned to drive and realize the vision and image of the future

Now …
“Make It So!”

THANK YOU!





Mark Mueller-Eberstein

The Innovation Economy Research Institute

CEO of Adgetec Corporation

Bestselling Author

- MarkME@adgetec.com
- Twitter: MarkMEberstein
- US +1 855.423.4383

WeChat: MarkMEberstein

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