Blockchain? What is Blockchain? Why Do I Care?

Presented by: John Jay King

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Session Objectives

- Understand the core technology underneath Bitcoin and other Internet currencies
- Learn how Blockchain works
- Become aware of how Blockchain may be applied to data and resources other than currency
- Know that Blockchain is much more than crypto-currency
- Begin thinking about whether there is a place for Blockchain in your future

Who Am I?

- John King – Partner, King Training Resources
- Oracle Ace Director
- Member Oak Table Network
- I help customers use technology through training and consulting in Oracle and other topics (http://www.kingtraining.com)
- "Techie" who knows Development, Java, Oracle, and SQL along with many other topics
- Member of AZORA, ODTUG, IOUG, and RMOUG
- One of those "dog-spoiling" people

King Training Resources

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Who Are You?

- Functional business person
- Application Architect
- Application Developer
- DBA
- Business Analyst
- Other?

Blockchain

- The Next "Big Thing" – maybe as important as the Internet!

OR

- A bunch of hype and bull.....

What Dilbert Has To Say

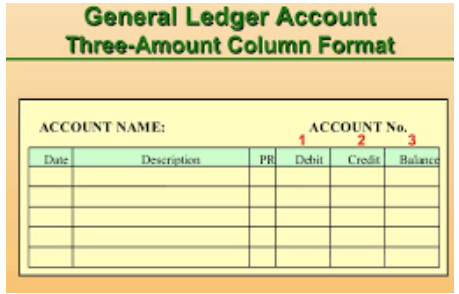
(Many thanks to Scott Adams...)

Wouldn’t You Like to Know...

- When you cast your vote, is the ballot actually counted?
- Is that friendly person on-line really who they say they are?
- Is “fair trade "coffee really sourced in a way respecting the planet and is fair to farmers?
- Simple! You Just Need a System That:
  - Stores records immutably at each step
  - Can be seen and verified by anyone
  - Has guaranteed cryptographic security

Ledgers

- The Oxford-English Dictionary's first definition for "ledger" reads as follows:
  ledger - noun A book or other collection of financial accounts.
  'the total balance of the purchases ledger'
- Most businesses have multiple ledgers
  - Transaction recording takes place on a ledger
  - Contractual information is stored on the ledger



What Is Blockchain? (#1)

- Blockchain is a shared, distributed ledger that organizations may use to track assets (records, ip, etc.) and record transactions
- Ledger is open and public (everyone can see and validate transactions)
- Ledger is distributed and exists on many network nodes
- Ledger is immutable (or nearly...)
- Transactions are verified by automated means using agreed-upon algorithms (commonly called “consensus”)

What Is Blockchain (#2)

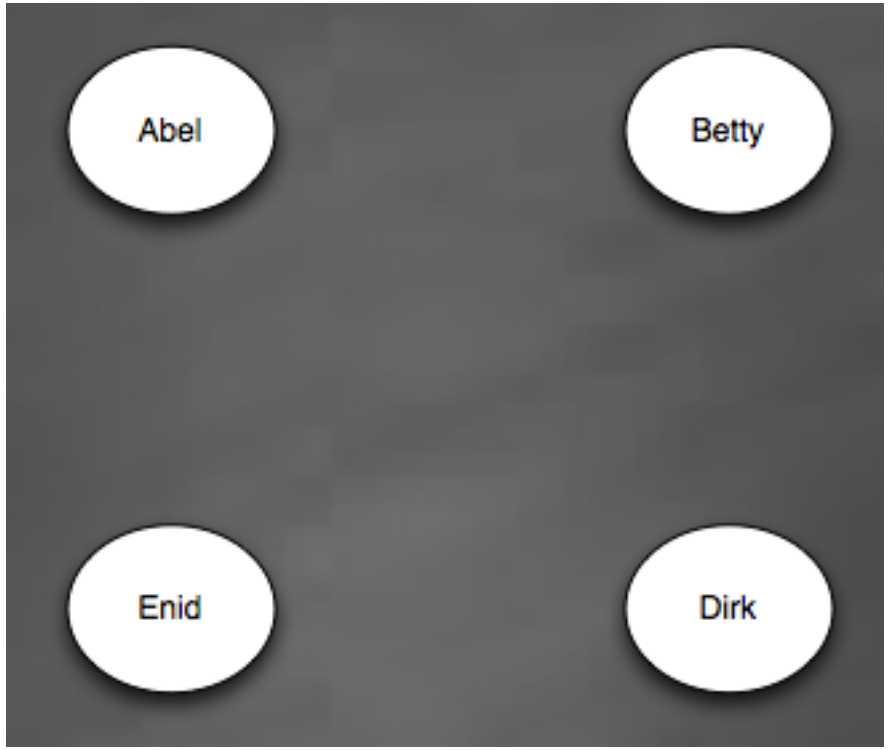
- A blockchain is an audit trail for a distributed database managed by a network of computers
  - No single network node is responsible for data; all data exists on all nodes
  - All networks nodes may see the data
  - When one node adds to the data; other nodes validate then replicate the data
  - Any node may leave the network without reducing the use or integrity of the data
  - Any node may recreate the data by processing the blockchain's audit trail

Blockchain ≠ Bitcoin

- It is often said that Blockchain is the technology enabling Bitcoin (not quite accurate...)
- Bitcoin is the most well-known use of blockchain technology to date
- Blockchain is ONE of the technologies that make Bitcoin successful; Bitcoin also relies upon open networks, cryptography, smart contracts, and consensus (proof-of-work)

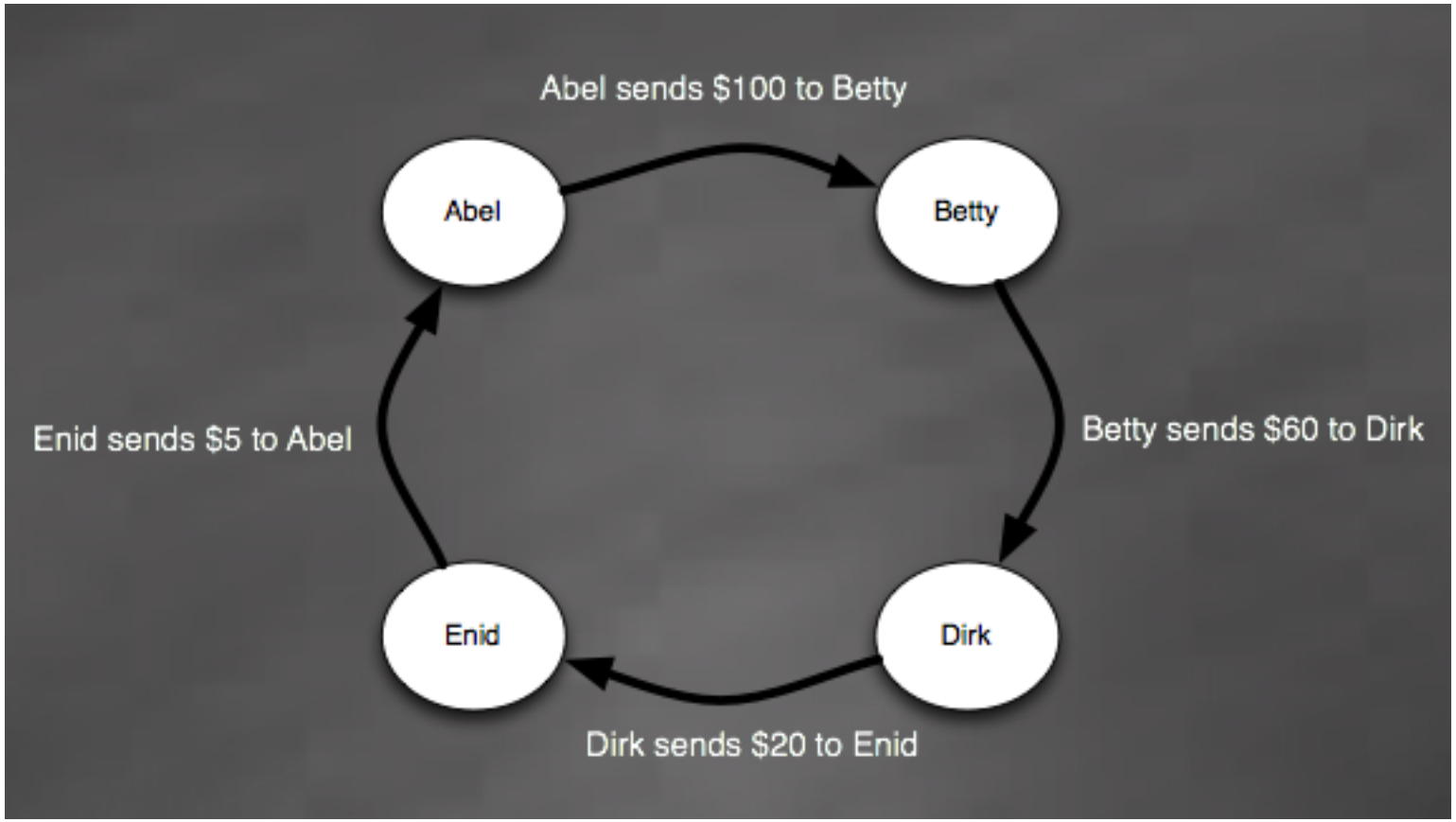
Example Network

- What if four people (Abel, Betty, Dirk, and Enid) wish to exchange money?



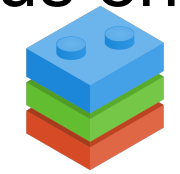
Transfers

- Suppose people transfer money:



Transactions & Blockchain

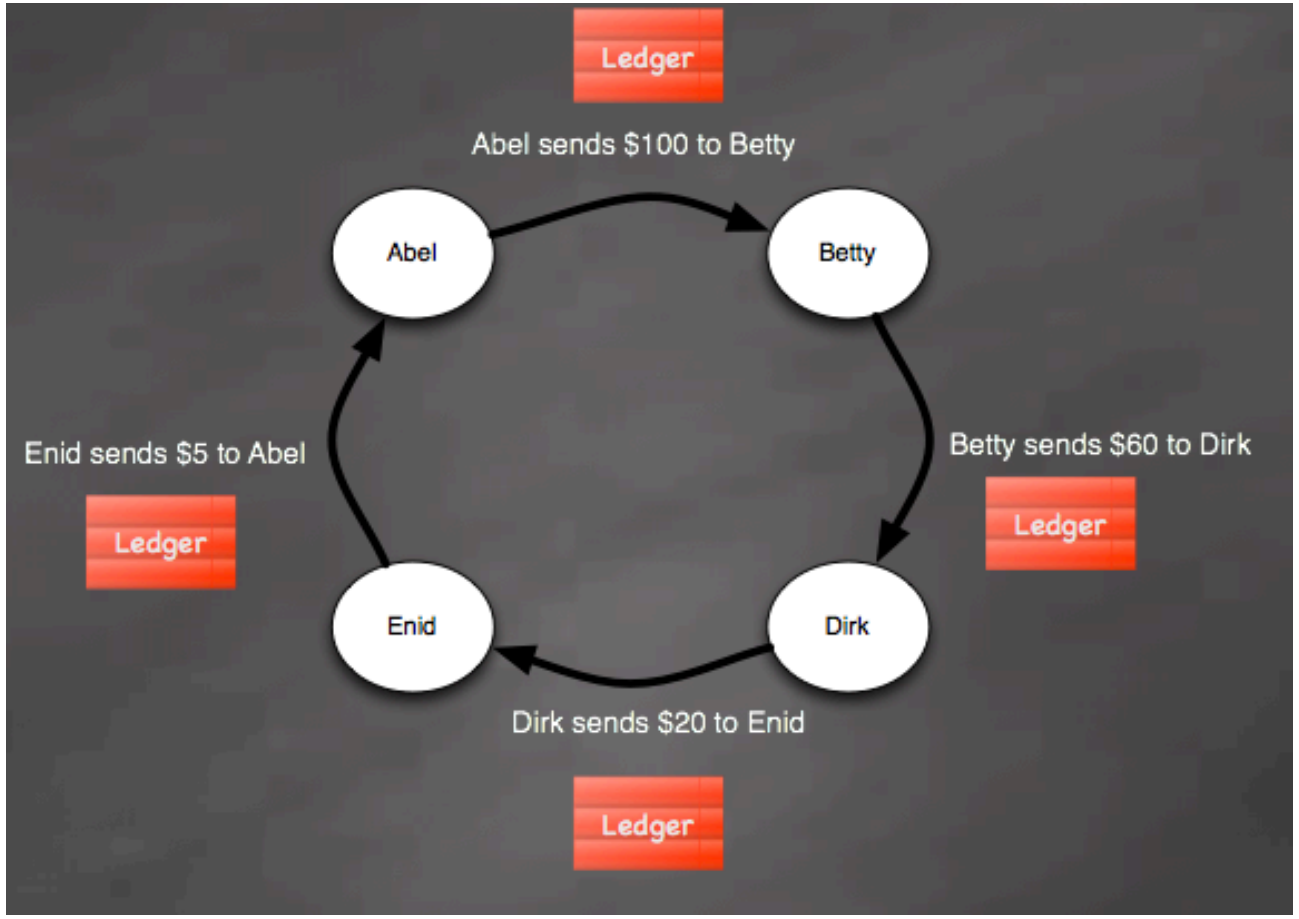
- Each time funds transfer (data is added)
  - Each transaction (block) is recorded in ledger
  - Each transaction added to the ledger points to previous entry in the chain (block chain)
  - Complete ledger stored at all network nodes



Abel-$100->Betty
Betty-$50->Dirk + Abel-$100->Betty
Dirk-$20->Enid + Betty-$50->Dirk + Abel-$100->Betty
Enid-$5->Abel + Dirk-$20->Enid + Betty-$50->Dirk + Abel-$100->Betty

Replication = Transparency

- Transactions are validated & stored by all nodes; no need for centralized intermediary



How “Synching & Validation” Occurs?

- Data must be synchronized & validated
  1. Let’s say Betty wants to send $50 to Dirk
  2. Betty broadcasts intent (not validated yet)
  3. “Miner nodes" compete to see which is first to validate the transaction and add to the ledger
     (first miner to achieve rewarded with (bitcoin))
  4. Miner validates recipient & sender
  5. Miner validates key by investing CPU (with bitcoin miner guesses key until getting match)
  6. Betty validates transaction and publishes to ledger for all to copy

It's All About Trust

- I must trust you in order to exchange transactions with you

  Without trust, commerce stops

  Huh? --- Who says I trust you?

Transactions Today

- Most transactions require trust; but you and I might not necessarily trust each other...
- Today we use an intermediary
  - You trust the intermediary
  - I trust the intermediary
  - The intermediary makes sure the assets to be exchanged exist
  - The intermediary maintains a ledger/database recording the transaction and transfer of assets
  - We trust transactions managed by the intermediary

About That Intermediary

- Today's intermediaries are everywhere, even entire industries:
  - Banks
  - Title companies
  - Motor Vehicle Departments
  - Many, many, more
- Each transaction through an intermediary takes time
- The intermediary usually charges a fee

Ledgers and Tampering

- Today's ledgers are tamperable, data can be removed & changed
- When we start transactions, we assume the other party cannot be trusted and might alter the ledger; that's why we work through intermediaries who keep centralized ledgers used to facilitate trust
- But, a crook who works for the intermediary can mess up everyone's lives

Immutable Blockchain

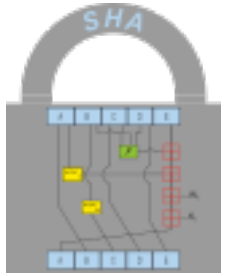
- A blockchain ledger is an upgrade of today's ledger
  - Every record has a unique key
  - Every record is written and stamped by the party that wrote the record
  - When the next record is written; everything from the previous record is part of what is used to create the new unique key
  - Blockchain ledger is immutable; if someone tampers with a record; a consensus algorithm discovers incorrect data; no one is “fooled”

Cryptography and “Hashing”

- Blockchains use modern cryptography to create unique “keys” for data
- A “hash function” is used to map digital data (varying sizes) to a number
- Even minor changes to the data results in MAJOR changes to the “hash” values
- Anyone with access to the hash function can validate a record easily
- Popular mechanisms used to “hash” data include: MD5, SHA1, and SHA256

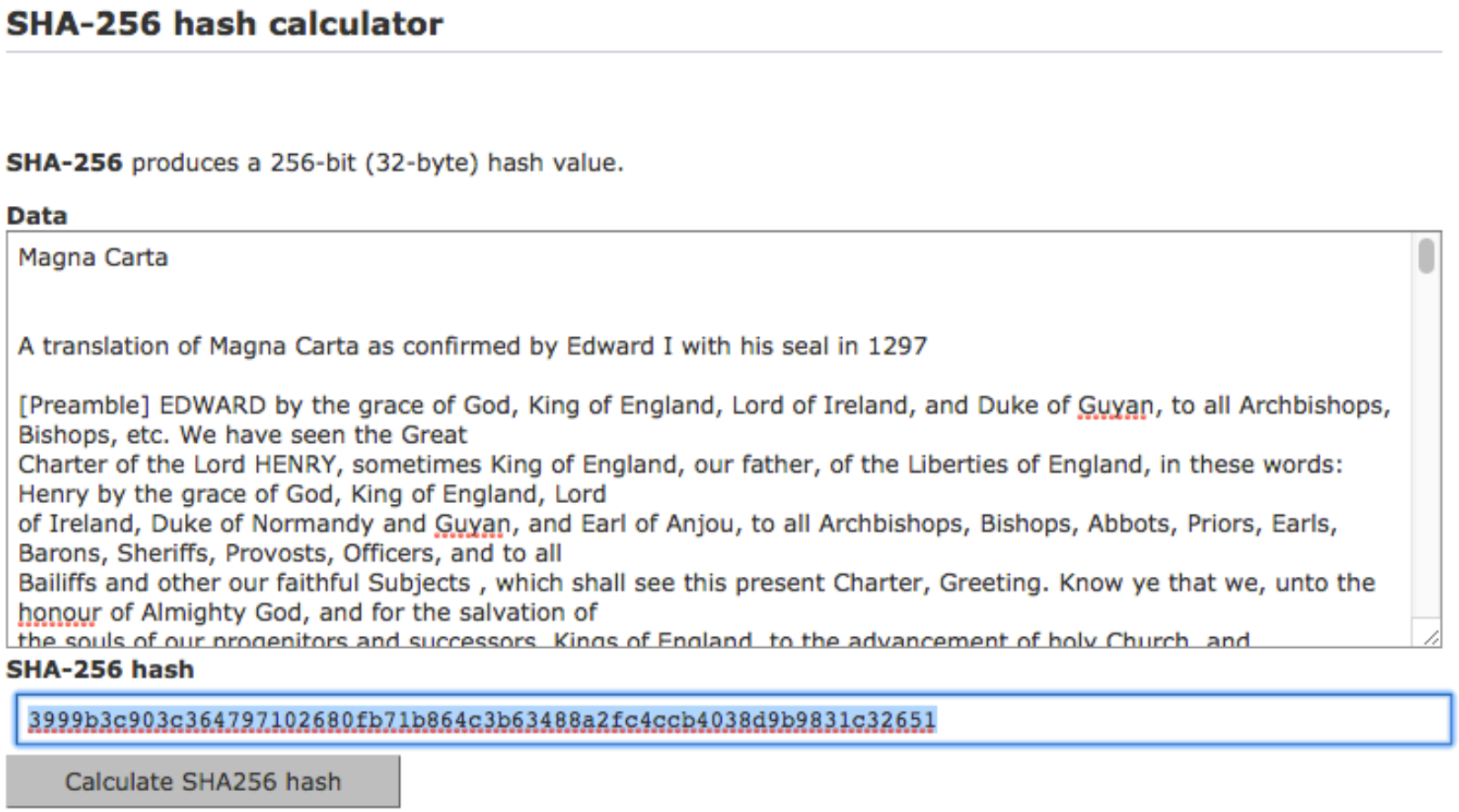
SHA256

- For example; take a look at SHA256
  - SHA256 generates a hash of seemingly random numbers
  - For given input data the same hash is generated every time
  - Regardless of quantity of data hashed; generated value is always the same length
    (32 bytes)



Example SHA256

- SHA256 calculator at http://www.xorbin.com hashes the Magna Carta (18,000+ chars)



Power of Hashing

- You could create a hash for Tolstoy's "War and Peace"

  f[WarAndPeace] = unique number

  = 1f45a781e8cc5b78a898f219
  2b8835bc913040ba2f3e321
  (not actual WP hash, made it up)

- Change a single character or add a comma and a different unique code results

Using Hashing

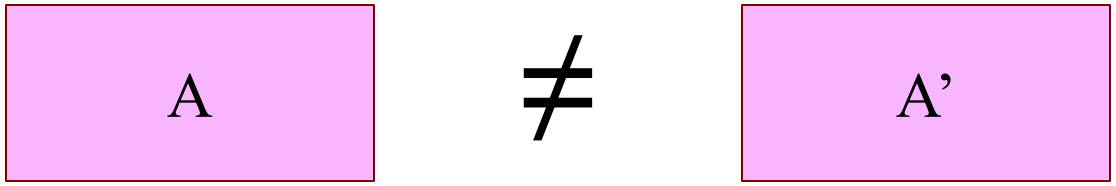
- Hashing might be used to validate your copy of a lease against the landlord's; drop them both into the same function and the hashes should match
- Hashing could help obscure identity: put name, DOB (date of birth), hair color, and height into a hash function; unique code could be an excellent ID (no way to reverse engineer)

A Real Stretch (or is it?)

- Suppose you had a network of generators all (hopefully) running the same software
  - The current release could be “hashed”
  - Any generator on the network can validate that their version of the software is identical to the other generators on the network by periodically comparing a hash; if no match, replace by copying from one of the other nodes
  - Someone who wants to insert malware into a generator must somehow infect all machines in order to succeed

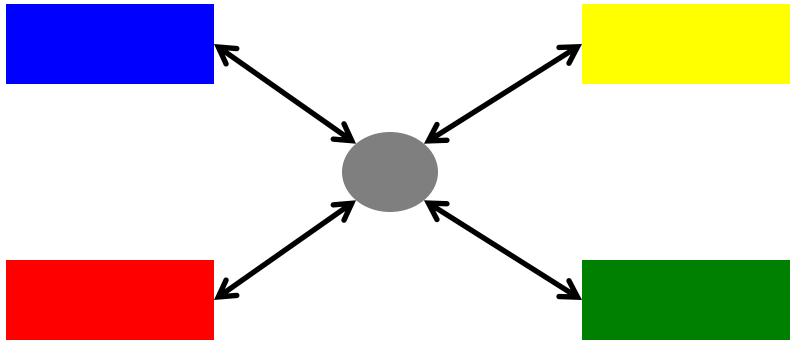
Blockchain Uses Hashing

- Blockchain records are hashed; the hash includes the hash of the previous record too
- Any change to a previous record causes an incorrect hash which is immediately identifiable as an error by other nodes



Today's Centralized Model

- Today's systems operate in a centralized model
  - Parties wishing to transact do so via central systems (banks, title companies, etc)
  - All parties trust the centralized system
  - Centralized systems create dependency and costs; usually on both sides of a transaction



Business Rules ???

- So far; we've only talked about validating the transaction itself; how do we ensure:
  - Assets to be exchanged exist
  - Assets are properly valued
  - Appropriate actions follow specific triggering events (e.g. receive payment -> ship product)
  - Actions follow contractually agreed-upon rules and processes

“Smart Contracts”

- "Smart Contract" is software storing rules for negotiating and executing the agreed-upon terms of a contract
- The smart contract is part of a blockchain

Using Smart Contracts, 1

- Untrusted parties transact directly using smart contracts
- Smart contracts are stored on the block chain (all parties have (identical) copies of the blockchain)
- Smart contract can execute agreed-upon stored processes when triggered by an authorized/agreed-to event just like traditional systems (e.g. when payment is confirmed, ship product)

Using Smart Contracts, 2

- All contractual transactions appear in the blockchain chronologically
  - Allows future access
  - Provides complete audit trail
- If any node/party tries to change a contract/transaction other nodes/parties can detect and prevent it
- If any node/party fails, system continues to function without loss of data or integrity

Impact of Smart Contracts

- Blockchain combined with smart contracts creates what logically behaves like a single computer system -- without the risks, costs, and trust issues of a centralized model
- Decentralized smart contracts allow parties to deal directly with each other
  - No middle woman/man
  - Quicker execution
  - Reduced costs

Consensus

- Consensus (51% of nodes) validates a transaction
  - Developing consensus mechanisms is difficult
  - Consensus protocols are only useful when they can handle adversarial attacks across the nodes of the network
  - Beware of “superior” consensus methods; require formal justifications and proofs (no “security by obscurity” allowed…)
- Today the most common consensus tools are:
  - Proof-of-work algorithm(PoW)
  - Proof-of-stake algorithm (PoS)
  - Practical byzantine fault tolerance algorithm (PBFT)
  - Delegated proof-of-stake algorithm (DPoS).

Proof of Work (Consensus)

- The pioneering Bitcoin architecture designed by “Satoshi Nakamoto” includes a consensus concept called “Proof of Work”
- Proof of Work is intended to achieve consensus across the nodes and avoid double-spending currency
- Proof of Work uses cryptography and lots of computational power that uses the scarcity of currency to make it work
- Other blockchain implementations are achieving consensus in a variety of ways

More on Proof of Work

- The topic Proof of Work could be an hour (or a day) by itself; here are the high points
  - Based upon scarcity of a “thing” with accepted mechanisms for creation and exchange
  - Assumes that everyone involved will accept the “thing” (a token) as having monetary value
  - Assumes that everyone plays by above rules
  - Distributed data must be kept synchronized in one of two ways: strict consistency (slow) and eventual consistency (fast, slower when conflicting transactions must be cancelled)
  - Uses cryptography to ensure trust

Proof of Work Blockchain

- Blockchains employing Proof of Work
  - Must make sure transaction funds exist
  - Makes sure funds are valid in blockchain
  - New blockchain records show transfer of funds
  - Once complete, sender will not be allowed to send the same funds again
  - Software must be able to establish trust:
    - Review blockchain to ensure sender has funds and that sender got funds “legally”
    - Add a number (called a “nonce”) to the block that makes calculations more difficult
    - “Miners” calculate a hash with specific features

Nonce

- The Proof of Work algorithm:
  - Adds a somewhat arbitrary rule that says “all valid hashes must look like XXX”
  - Adds additional numeric value to the block being hashed (called a “nonce”)
  - Adds “Miners” – network members willing to determine what nonce value meets the rule
    (first one to generate a hash meeting the rule stores the block and is rewarded with bitcoin – **yes this is a gross simplification!**)

How Nonce is Used

- Concatenate the string that represents your transaction to the nonce field
- Generate hash; check to see if it conforms and is unique

f(xxxxxMytransactionxxxx + **00001**) = 1313145….

- If not, add one to the nonce field and hash again; check if it conforms and is unique

f(xxxxxMytransactionxxxx + **00002**) = 8101467….

- Repeat until hash conforms and is unique

f(xxxxxMytransactionxxxx + **00???**) = **0000**1265….

Recapping Consensus

- Consensus is a disarmingly simple word
- To make blockchain work in the enterprise consensus algorithms/processes must allow us to trust the actions of others using a method that scales
- In this author's opinion this is still an area that needs work
- Some other Consensus algorithms you might hear about include: Proof of Stake, Proof of Activity, Proof of Burn, Proof of Capacity, Proof of Elapsed Time, more!

Distributed Ledger Strengths

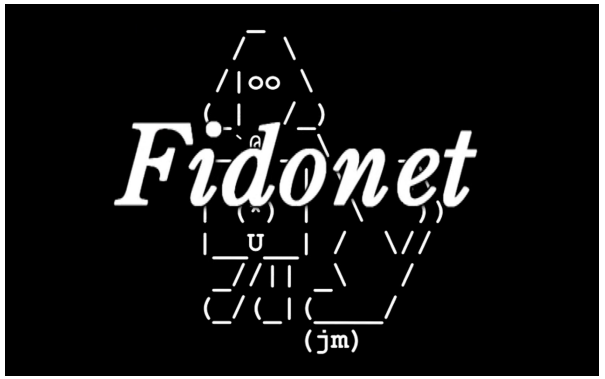
- Ledger is open so all can see
- Ledger is distributed across the nodes
- Ledger is synchronized across all nodes
- Blocks are hashed to ensure validity; all nodes have access to hashing function
- Block changes invalidate hash and break all subsequent blocks
  - Change last block; only current block is hashed
  - To change earlier block; all subsequent blocks must be re-hashed (won't match other nodes)

Yes, It's All About Trust

- The "innovation" that blockchain makes possible is the automation of trust allowing direct transactions without need of intermediaries

Do You Remember The Early 1990's?

- There was this thing called "the InterNet" that geeks knew about



- Then, along came "email" and suddenly everybody needed "the InterNet" – in fact many thought email was the internet!

So How About Bitcoin?

- Bitcoin is the most-successful and well known implementation of blockchain today
- Bitcoin is a “cyber-currency” and digital payment system
  - Invented by an unknown programmer under the pseudonym “Satoshi Nakamoto” and released as open-source software in 2009
  - Works using network of “peer-to-peer” nodes transacting directly with each other
  - Transactions are verified by nodes and recorded in a distributed-ledger blockchain

Bitcoin's Blockchain

- Bitcoin's blockchain is a global decentralized ledger holding the complete history of all bitcoin transactions
- The Bitcoin blockchain is verified and stored by every node in the bitcoin network
  (today over 6k nodes, see coming chart)
- Bitcoin's smart contract ensures the blockchain is the same on all nodes (except when problems found)
- Bitcoin nodes may come and go without negatively impacting the network

How Bitcoin Works, 1

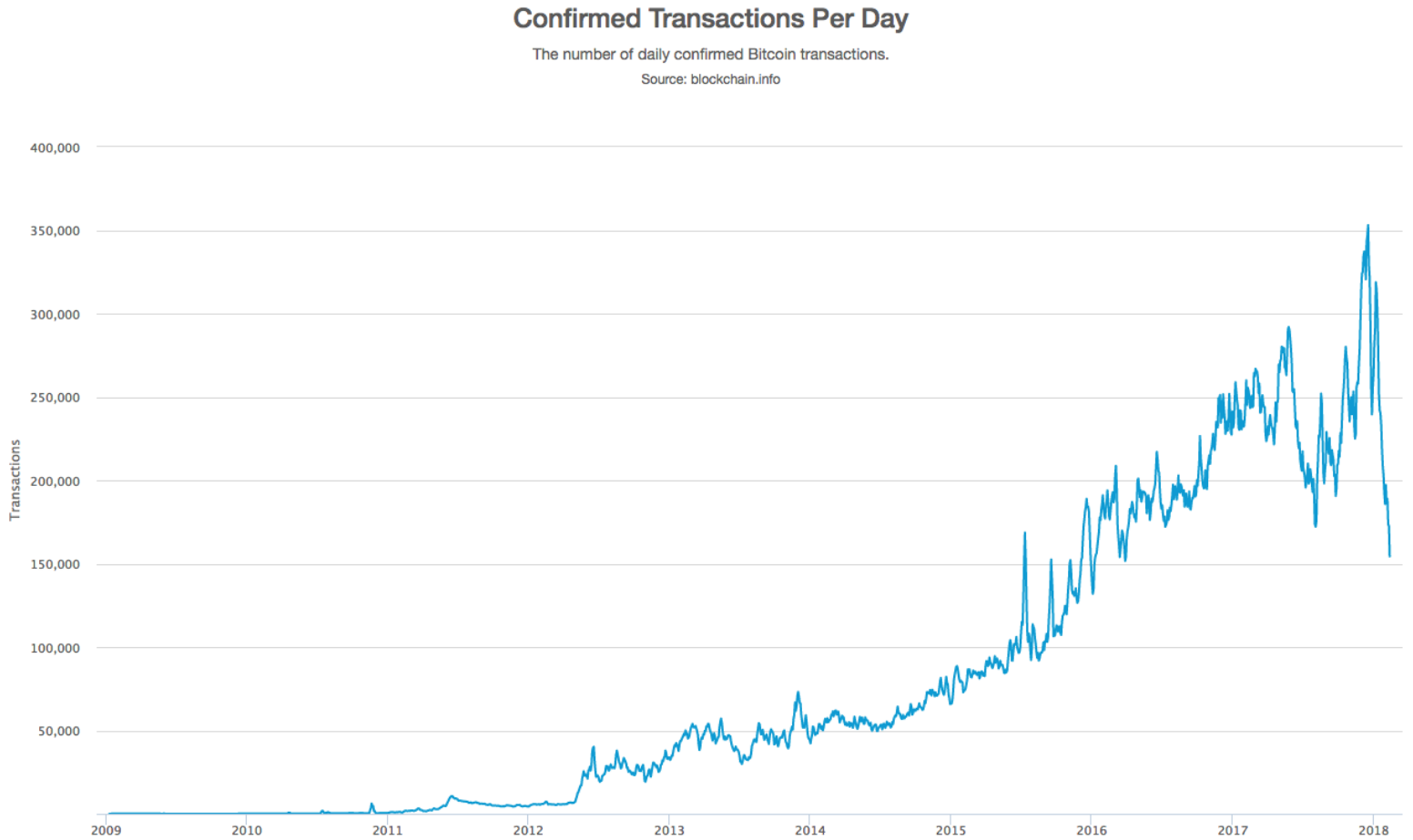
- Each node in the network verifies and stores the blockchain
- Every node has the same blockchain version
- No central authority is required to verify transactions
- Nodes may enter/leave the network without impacting each other or current transactions
- Nodes may create a new transaction block ("mining") pointing to the previous block in the chain

How Bitcoin Works, 2

- Bitcoin uses a concept called "proof of work” to make sure that mining is evenly distributed and a new global consensus is reached
- Only one “miner” is allowed to add a transaction to the blockchain; successful “miners” are rewarded with a small bitcoin payment ensuring that many nodes compete to “mine” in the future

Bitcoin Daily Transactions

- History of daily Bitcoin transactions at: https://blockchain.info/charts/n-transactions?timespan=all&daysAverageString=7



Bitcoin Nodes

- See the breadth of Bitcoin's blockchain nodes at: https://getaddr.bitnodes.io

GLOBAL BITCOIN NODES DISTRIBUTION

Reachable nodes as of Tue Feb 13 2018 12:16:15 GMT-0700 (MST).

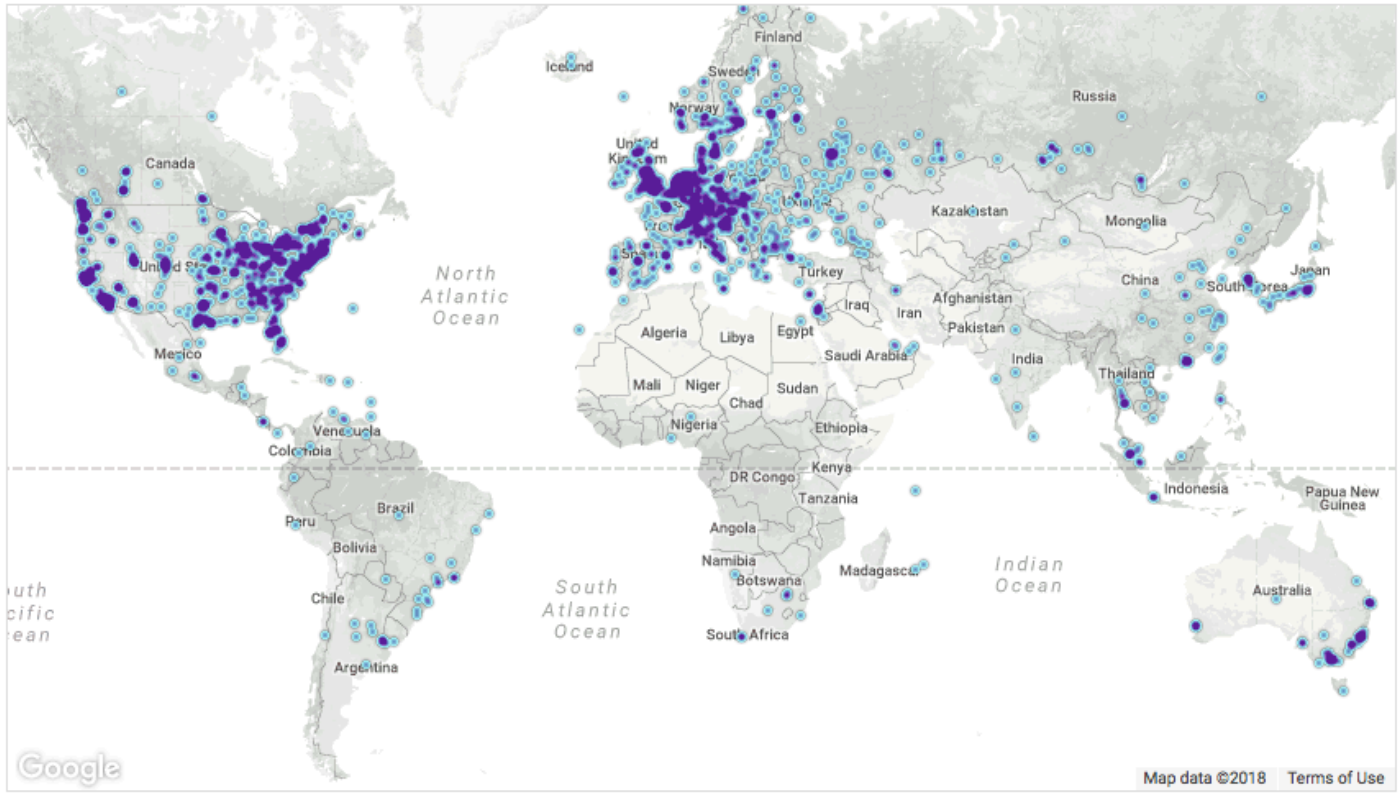
11411 NODES

24-hour charts »

Top 10 countries with their respective number of reachable nodes are as follow.

RANK	COUNTRY	NODES
1	United States	2974 (26.06%)
2	Germany	2102 (18.42%)
3	China	819 (7.18%)
4	France	766 (6.71%)
5	Netherlands	525 (4.60%)
6	Canada	429 (3.76%)
7	Russian Federation	381 (3.34%)
8	United Kingdom	369 (3.23%)
9	n/a	288 (2.52%)
10	Japan	227 (1.99%)

More (102) »

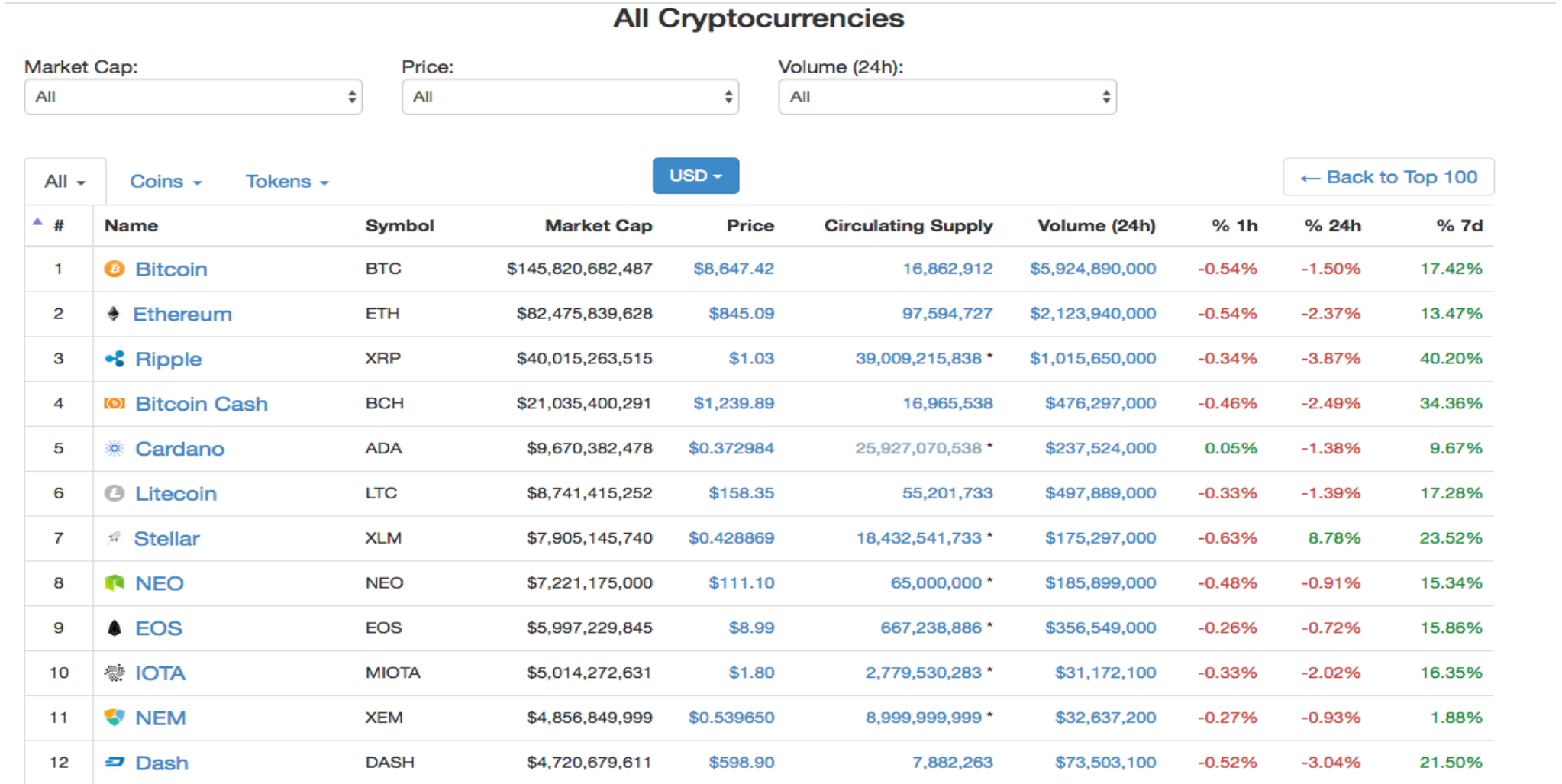


Map shows concentration of reachable Bitcoin nodes found in countries around the world.

LIVE MAP

Other Crypto-Currencies

- Today, over 1,500 crypto-currencies exist; most are listed at https://coinmarketcap.com/all/views/all/



All Cryptocurrencies

Market Cap: All | Price: All | Volume (24h): All

All | Coins | Tokens | USD | ← Back to Top 100

#	Name	Symbol	Market Cap	Price	Circulating Supply	Volume (24h)	% 1h	% 24h	% 7d
1	Bitcoin	BTC	$145,820,682,487	$8,647.42	16,862,912	$5,924,890,000	-0.54%	-1.50%	17.42%
2	Ethereum	ETH	$82,475,839,628	$845.09	97,594,727	$2,123,940,000	-0.54%	-2.37%	13.47%
3	Ripple	XRP	$40,015,263,515	$1.03	39,009,215,838 *	$1,015,650,000	-0.34%	-3.87%	40.20%
4	Bitcoin Cash	BCH	$21,035,400,291	$1,239.89	16,965,538	$476,297,000	-0.46%	-2.49%	34.36%
5	Cardano	ADA	$9,670,382,478	$0.372984	25,927,070,538 *	$237,524,000	0.05%	-1.38%	9.67%
6	Litecoin	LTC	$8,741,415,252	$158.35	55,201,733	$497,889,000	-0.33%	-1.39%	17.28%
7	Stellar	XLM	$7,905,145,740	$0.428869	18,432,541,733 *	$175,297,000	-0.63%	8.78%	23.52%
8	NEO	NEO	$7,221,175,000	$111.10	65,000,000 *	$185,899,000	-0.48%	-0.91%	15.34%
9	EOS	EOS	$5,997,229,845	$8.99	667,238,886 *	$356,549,000	-0.26%	-0.72%	15.86%
10	IOTA	MIOTA	$5,014,272,631	$1.80	2,779,530,283 *	$31,172,100	-0.33%	-2.02%	16.35%
11	NEM	XEM	$4,856,849,999	$0.539650	8,999,999,999 *	$32,637,200	-0.27%	-0.93%	1.88%
12	Dash	DASH	$4,720,679,611	$598.90	7,882,263	$73,503,100	-0.52%	-3.04%	21.50%

Bitcoin – Good for Currency

- Bitcoin has some features that make it unsuitable for many long term enterprise applications
  - Bitcoin is payment based, maximum block size is 1MB
  - Bitcoin capacity is limited to around 300k transactions/day
- Bitcoin was the first blockchain implemented
- Today, many other blockchain implementations exist and more are coming

Scalability for Enterprise

- A significant issue for enterprise planning is scalability
  - Bitcoin 3-4 tps (more with larger blocksizes)
  - Ethereum 20 tps (new Raiden system theoretic max 1M tps)
  - Paypal 193 tps (hit 450 tps on Cyber Monday 2015)
  - Visa 1,700 tps (daily peak 4,000 tps, est. max. 56K tps)
- Enterprise blockchains must be capable of high transaction rates

Blockchain and Other Assets

- Blockchains may store assets of any length using “tokens”
- An issuer adds "tokens” representing an "asset" by storing metadata in a transaction
- Issuer may transfer ownership via contract to some other blockchain participant
- The transfer of assets does not require approval of the issuer or any other authority
- Tokens act like bearer bonds; ownership of is verified in the blockchain (token≈asset)

Blockchain; Not Bitcoin

- It’s about blockchain; not bitcoin
- In addition to bitcoins (or currency) blockchains can store any digital data
- Digital signatures in the blocks may be used to "notarize" transactions via services like "Proof of Existence" and "BlockSign"
- Other tools allow storing larger data items or tokens representing them in the blockchain

Introducing Ethereum

- An open-source blockchain using smart contracts https://www.ethereum.org/
- Probably the second best known blockchain (after Bitcoin)
- Ethereum is a block chain platform incorporating smart contracts that promises “without any possibility of downtime, censorship, fraud or third party interference”
- Ethereum’s smart contract language is called “Solidity”
- Currently, Ethereum uses Proof-of-Work like blockchain; sometime later this year it will switch to Proof-of-Stake

Introducing Hyperledger

- Hyperledger - open-source blockchain effort: https://www.hyperledger.org/

- Sponsored by the Linux foundation and other enterprise members; projects include:
  - Burrow - smart contract following Ethereum Virtual Machine (EVM) specification
  - Fabric – blockchain core for applications
  - Iroha - distributed ledger for infrastructure projects
  - Sawtooth - modular blockchain
  - Indy - tools and components

So, What About the Enterprise?

- Clearly the bitcoin model is not suitable for the transaction rates of enterprise apps
- What if the network is private?
- What if membership is permissioned instead of open?
- Can you use a simplified consensus mechanism if network members are trusted?
- What if a blockchain has “subchains” so that not all transactions are available to all?
- What if you “aged” parts of the chain to keep it’s size manageable?

Blockchain as a Service

- Several vendors have introduced products called "Blockchain as a Service (IBM, Microsoft, Oracle,…) " – others will have them soon"
- Most are using either Hyperledger or Ethereum features to manage the blockchains
- Smart contracts are used as part of the consensus and commit mechanisms
- Blockchain "purists" sometimes complain that these tools violate the principles of blockchain – this still needs some work…

Hyperledger Fabric

- Hyperledger Fabric is a blockchain model designed for business use
- IBM, Microsoft, and Oracle all use Hyperledger Fabric in their Blockchain offerings
- Hyperledger Fabric is a “Permissioned” Blockchain
  - Network only open to invitees
  - No cryptocurrencies
  - No need for “miners” (consensus by smart contract)
- Smart Contracts (Chaincode) written with “Go” and run in secure Docker containers; Java and other languages soon

Hyperledger Fabric Features

Assets	Definitions used to describe things of value to be exchanged over the network
Chaincode	Contract software that executes, applies business rules, and posts to ledger
Ledger Features	Immutable encoded transaction history for each channel with query capabilities
Channels	Subnets enable privacy and confidentiality for participating network members
Security	Ensures all participants can trust trans. and authorized regulators/auditors
Consensus	Designed to meet the needs of enterprise scalability

Blockchain Review

- Shared Distributed Ledger - one system of record
- Smart Contract - contractual obligation of people contributing (governance)
- Consensus - all parties must agree to verify transaction
- Privacy – cryptography enables anonymity and security

Blockchain For Commerce

- Commerce Today
  - Ledgers tamperable & centralized
  - Trust, but verify; requires slow and sometimes expensive intermediaries
- Blockchain Commerce
  - Ledgers immutable & distributed
  - Ledgers trusted, immediately recorded, easily available, easily verified
  - Transparent
- Intermediaries will no longer be necessary

Why We Need Blockchain

- Currently institutions interact using proprietary databases requiring human interfaces and bureaucracy
  - Time required to settle transactions can be lengthy
  - Validation & trust requires 3rd-party intermediaries
  - Centralized data source is target for mischief
  - Most systems not transparent
- Blockchains allow parties to share a common software-managed database with no central authority that holds all previous values in addition to the current value

Potential Blockchain Uses

- Think about transactions that are too slow, too expensive, and require mediation
- Many might benefit from automation:
  - Registration of land titles
  - Proving ownership of automobiles, aircraft, boats
- Using a blockchain allows transactions to be recorded permanently in many places making it impossible for someone to steal the asset with fake documentation (or at least, really-really-really difficult)

Some Concrete Examples

- Some assets blockchain might improve:
  - Titles of a car/boat/aircraft/house/plot/etc.
  - Recording aircraft maintenance and parts in a way that cannot be modified/altered
  - Tracking patient medical history cradle-to-grave including: operations, allergies, surgeries, medications, and so on
    - Imagine not filling in the same information each time you visit a new healthcare provider!
    - Imagine a system smart enough to keep you from getting the wrong drugs or conflicting drugs

All is wonderful and the birds are singing...

Real World Examples

- IBM global financing uses blockchain (Hyperledger) to reconcile transactions
- You can now book flights on S7 (largest internal Russian airline uses Ethereum)
- Walmart using IBM's Blockchain to support its Food Safety Collaboration Centre
- Barclays Africa, Bank of America and HSBC have used blockchain to facilitate transfer of trade documents for their clients
- Maersk (Danish shipping) testing blockchain to track shipments & coordinate with customs

Blockchain - Not For Everyone

- Blockchain is an excellent technology that can help solve many of today's problems; but, maybe not quickly
- Blockchain use will expand incrementally and predominantly be used for new things
- Blockchain's addition to existing systems will probably require significant changes to processes that have been around for years and will eliminate profits for an entire class of vendors; don't expect this to happen fast
- Blockchain *IS NOT* a universal solution; in some places it fits perfectly

Telling Blockchain from BS

- Here's some tests paraphrased from blockchain guru - Andreas Antonopolous
  - Is it open?
  - Is it public and borderless?
  - Is it censorship resistant?
  - Is it neutral?
  - Can anyone access it, use it, and innovate on it without permission?
- If ALL answers above are "true" it's really a blockchain; not some marketing ploy

Beware Carpetbaggers

- As with all new technologies; there are those that seek to capitalize by slapping the “blockchain” label upon existing (or unsuitable) products
- Blockchain “guru” **Andreas M. Antonopoulos** warns us to beware of systems that claim to be blockchain but remove immutability, limit contributors, or use a clearing house or consortium to validate
  -- It’s just
  “blockchain” lipstick on a legacy pig!

Wrapping it all Up

- Blockchain is an important technology that will have enormous impact
- Blockchain is “a toddler” like 1995’s Internet
- CryptoCurrency is the "email" of block chain, it is enabling blockchain adoption in the same way that email paved the way for the Internet
- Enterprise use of blockchain will require careful planning, proactive security, and scalability
- Here’s the rub: it’s not about taking over your bank account; it's about un-banking all of us

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Blockchain? What is Blockchain?
Why do I care?

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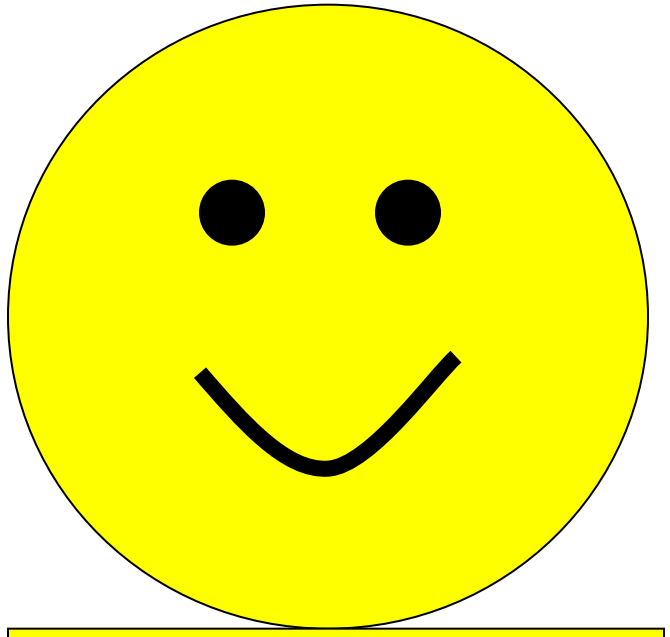

Thanks for your attention!

To contact the author:

John King

King Training Resources

P. O. Box 1780
Scottsdale, AZ 85252 USA
1.303.798.5727
Email: john@kingtraining.com
Twitter: @royaltwit
Linked In: https://www.linkedin.com/in/john-king-4175603

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