Blockchain made Simple

- Rhonda Okamoto, Blockchain & Cryptocurrency Enthusiast
- rhondaokamoto@gmail.com
- 609-433-1442

- What is Blockchain?

- When and Where is Blockchain useful?

- What is the difference between Bitcoin and Blockchain?

- What solutions does Blockchain provide for your business?

Is it fair to say that Technology has never moved this fast and it will never move this slow again!

Are you born to Adapt? https://youtu.be/rNC5ga0ZPDI

THE EVOLUTION OF E-COMMERCE

The 90s The era of the PC Business moved onto Personal Computer. Jobs has been replaced by a computer. Business moved from offline to online

The 2000s The era DoMain. Business moved from offline to online

Local address changed to a domain address.

The 2010s The era of Apps 2009 - the maturity of 3G network and App Store. Over 5 billion mobile phones in the world today.

The 2020s The blockchain era 21st-century enterprises have to solve the issue of TRUST. Transparency, non-reversible of data.

If your business works in any way with transactional infrastructure or applications, blockchain is a technology well worth consideration.

Blockchains consist of a series of blocks of transactions.

A transaction is an event in which a resource or asset changes possession from one party to another.

These individual transactions are signed by the users engaging in those transactions through the use of public-private key encryption.

Because the private key is necessary to release and accept a resource in a transaction on the blockchain, the users transacting on the blockchain are, in effect, signing the transaction to ensure its security.

Transactions are grouped together and made into a block.

What is Blockchain?

What are the characteristics of a Blockchain? Secure, Decentralized, Shared Ledger, Immutable

1

Secure: **Cryptographically Secured** – using hashes, digital signatures to secure the chain

2

Decentralized: broadly replicated and verified by different entities

3

Shared Ledger: common view across a network of (often untrusted) entities

4

Immutable: transactions never deleted or changed, absolutely everything is logged.

Blockchains have users and nodes on the blockchain platform.

The users on a blockchain could be the individuals, businesses, or other identities which have a public-private key pair and conduct transactions.

A node is a computing system on that blockchain.

A user may have a node (e.g., an individual's computer or a business's computing network), or a group of users could pool resources to create a single node (e.g., users who share their computing power to mine for new blocks on the blockchain).

Blockchain Addresses the 3 Faults

Blockchain adds…

Value

Enables a unique asset to be transferred over the Internet without a middle centralized agent.

When is Blockchain Useful?

Trust

Creates a permanent, secure and unalterable record of who owns what. Using advanced Hash Cryptography, "Information integrity" is preserved.

Reliability

Decentralized network structure ensures that there is no single point of failure which could bring the entire system down.

What happens when a transaction is executed through blockchain?

- It's grouped together in a 'block' with all other transactions that recently occurred.

- In order for these transactions to be finalized, they must be validated by more than 50% of the systems within the blockchain's network.

- Once that validation is complete, the block is timestamped and linked to the rest of the chain.

- With blockchain technology, there's no middleman that could potentially serve as a source of leaks or compromised data.

- Digital certificates keep every transactional participant completely anonymous, and a private-public key mechanism coupled with powerful cryptographic algorithms keep everything secure.

Where is BLOCKCHAIN Useful?

- Blockchain is a Distributed Ledger Technology (DLT) that was invented to support the Bitcoin cryptocurrency.

- Bitcoin was motivated by an extreme rejection of government-guaranteed money and bank-controlled payments. The developer of Bitcoin, Satoshi Nakamoto envisioned people spending money without friction, intermediaries, regulation or the need to know or trust other parties.
  The central problem in electronic cash is Double Spend.

- Because pure electronic money is just data, nothing stops a currency holder from trying to spend it twice.

- Blockchain solves the Double Spend problem without a digital reserve
  Blockchain monitors and verifies Bitcoin transactions by calling upon a decentralized network of volunteer-run nodes to, in effect, vote on the order in which transactions occur. The network's algorithm ensures that each transaction is unique.

Best of all, it's open-source

ANYONE CAN LEVERAGE THE TECHNOLOGY FOR THEIR OWN PROJECTS.

"BLOCKCHAIN APPLICATIONS DISRUPT CONVENTIONAL THINKING AND CONVENTIONAL APPROACHES REGARDING DATA PROCESSING, HANDLING, AND STORAGE.

FROM PLACING BLOCKCHAIN AT THE CORE OF BUSINESS NETWORKS FOR TRACEABILITY AND AUDITABILITY,

A WAY FOR ORDINARY PEOPLE TO EASILY AND CHEAPLY POST A DOCUMENT AS PART OF A PATENT PROCESS

A WAY TO COUNTERACT BOOTLEGGING AND COUNTERFEITING IN COMMODITY SUPPLY CHAIN

A WAY TO ADD AN ADDITIONAL LAYER OF SECURITY TO SIMPLE EMAIL EXCHANGE; FROM ELECTRONIC VOTING SYSTEMS THROUGH TO MEDIAL RECORD STORAGE."

Smart Contracts

BLOCKCHAIN'S DIGITAL NATURE HAS LED TO IT BEING ASSOCIATED WITH SMART CONTRACTS.

A CONTRACT IN THE PHYSICAL WORLD IS AN AGREEMENT AMONG PARTIES THAT, UPON EXECUTION OF CERTAIN CONDITIONS, A TRANSFER OF ASSETS WILL OCCUR.

A SMART CONTACT CODIFIES THESE ATTRIBUTES IN CODE, SO THAT MACHINES CAN VALIDATE THAT CONDITIONS ARE MET, AND INITIATE THE TRANSFER OF ASSETS.

IN ADDITION TO THE PARTIES ENGAGING IN THE TRANSACTION, OTHER USERS OF THE BLOCKCHAIN PLATFORM MAY PROVIDE COMPUTATIONAL RESOURCES NECESSARY TO PROCESS OR VALIDATE THE CONTRACTUAL TRANSACTION, THEREBY GAINING A STAKE IN THE TRANSACTION OR CONTRIBUTING TO THE VERIFICATION OF THE TRANSACTION ON THE LEDGER.

Defining Technology of this Generation

Cryptocurrencies

- Bitcoin is the most popular cryptocurrency, garnering the largest market share, and arguably initiated the interest in blockchain technology.

- Cryptocurrencies, like Bitcoin, are built to allow the exchange of some digital asset of value (the cryptocurrency) for a good or service.

- **Bitcoin** was designed purely as a digital currency.

- They are frequently permissionless and use a proof of work model to add blocks.

- In these systems, anyone can create a wallet which includes their private key, their public key, and an address which is derived from their public key.

- Bitcoin and other cryptocurrencies each have their own blockchain.

What is the difference between Bitcoin and Blockchain?

BITCOIN IS AN ELECTRONIC DECENTRALIZED CURRENCY
MANAGED ON A PEER-TO-PEER NETWORK

PEER-TO-PEER

NO CENTRAL AUTHORITY

CRYPTOCURRENCY

BASED ON A VERSION BLOCKCHAIN
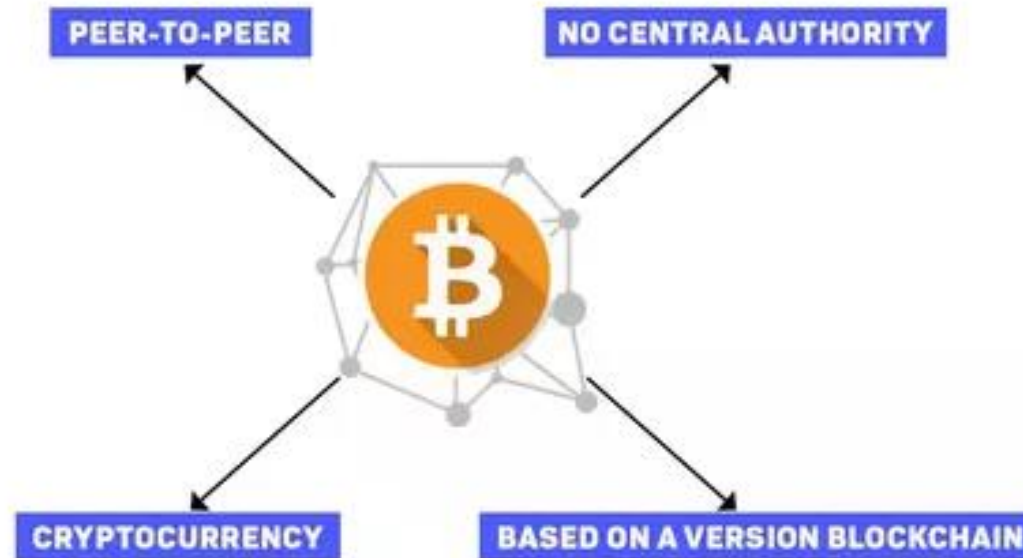
BITCOIN AND BLOCKCHAIN HAVE DIVERGED
OVER THE PAST 12-18 MONTHS

Bitcoin

- The leading digital currency
- Numerous consumer/SME and financial service payment applications, particularly in developing economies
- A favourite for speculators given its volatility and liquidity, with high-frequency trading and hedge fund participation

Blockchain

- Distributed ledger with cryptographic integrity
- Potential replacement for middleware networks and clearing houses in financial transactions where 3rd party verification is required
- Applications extend to other networks where veracity is critical to performance

While Bitcoin is established as the leading digital currency,
banks are more focused on applications of the underlying Blockchain technology

7

50+ BLOCKCHAIN
REAL WORLD USES CASES

GOVERNMENT
Essentia develops world's first blockchain solution to manage international logistics hub together with Traffic Labs and the Finnish Government

essentia.one

IDENTIFICATION
Voter registration is being facilitated via a blockchain project in Switzerland spearheaded by Uport.

uport

MOBILE PAYMENTS
The blockchain ledger that Ripple uses has been latched onto by a group of Japanese banks, who will be using it for quick mobile payments.

ripple

INSURANCE
A smart contract-based blockchain is being used by Insurer American International Group Inc as a means of saving costs and increasing transparency.

AIG

ENDANGERED SPECIES PROTECTION
The protection of endangered species is being facilitated via a blockchain project that records the activities of these rare animals.

CARBON OFFSETS
IBM is using the Hyperledger Fabric blockchain in China to monitor carbon offset trading.

IBM
HYPERLEDGER

ENTERPRISE
Ethereum's blockchain can be accessed as a cloud-based service courtesy of Microsoft Azure.

Microsoft Azure

BORDER CONTROL
Essentia has devised a border control system that would use blockchain to store passenger data in the Netherlands.

essentia.one

SUPPLY CHAINS
IBM and Walmart have partnered in China to create a blockchain project that will monitor food safety.

IBM
Walmart

HEALTHCARE
A number of healthcare systems that store data on the blockchain have been pioneered including MedRec.

MEDREC

SHIPPING
Shipping is a natural fit for blockchain, and Maersk have been trialling a blockchainbased project within the maritime logistics industry.

MAERSK

REAL ESTATE
Blockchain is now being used to complete real estate deals, the first of which was conducted in Kiev by Propy.

PROPY

ENERGY
Essentia is developing a test project that will help energy suppliers track the distribution of their resources in real time, whilst maintaining data confidentiality.

essentia.one

LAND REGISTRY
Land registry titles are now being stored on the blockchain in Georgia in a project developed by the National Agency of Public Registry.

NATIONAL AGENCY of PUBLIC REGISTRY

COMPUTATION
Digital Currency Group are helping Amazon Web Services examine ways in which the distributed ledger technology can help improve database security.

DIGITAL CURRENCY GROUP

ADVERTISING
New York Interactive Advertising Exchange has been experimen-ting with blockchain as a means of providing an ads marketplace for publishers.

NYIAX

BORDER CONTROL
Essentia is developing a blockchain project for border control that will allow customs agents to record passenger data from an array of inputs and safely store it.

essentia.one

JOURNALISM
Decentralized journalism, as enabled by blockchain technology, has the potential to prevent censorship and increase transparency, as Civil has shown.

CIVIL

WASTE MANAGEMENT
Waltonchain is using RFID technology to store waste management data on the blockchain in China.

ENERGY
Food importation is another industry where blockchain is proving its worth, with Louis Dreyfus Co trialling a soybean importation operation using this technology.

LDC. Louis Dreyfus Company

DIAMONDS
The De Beers Group is using blockchain to track the importation and sale of diamonds.

DE BEERS Group of Companies

FINE ART
By storing certificates of authenticity on the blockchain, it's possible to dramati-cally reduce art forgeries, as one blockchain project is proving.

NATIONAL SECURITY
For the past two years, the US Department of Homeland Security has been using blockchain to record and safely store data captured from its security cameras.

TOURISM
In a bid to boost its tourism economy, Hawaii is examining ways in which blockchain-based cryptocurrencies can be adopted throughout the US state.

STATE OF HAWAII

TAXATION
In China, a tax-based initiative is using blockchain to store tax records and electronic invoices led by Miaocai Network.

ENERGY
Chile's National Energy Commission has started using blockchain technology as a way of certifying data pertaining to the country's energy usage as it seeks to update its electrical infrastructure.

CNE COMISIÓN NACIONAL DE ENERGÍA

RAILWAYS
Russian rail operator Novotrans is storing inventory data on a blockchain pertaining to repair requests and rolling stock

НОВОТРАНС

ENTERPRISE
Google is building its own blockchain which will be integrated into its cloud-based services, enabling businesses to store data on it, and to request their own white label version developed by Alphabet Inc

Google
Alphabet

MUSIC
Arbit is a blockchain-based project led by former Guns N Roses drummer Matt Sorum seeking a fairer way to reward musicians for their creative efforts.

arbit

FISHING
Blockchain technology has been used to provide a transparent record of where fish was caught, as a means of ensuring it was legally landed.

THE INTERNET OF BLOCKCHAIN FOUNDATION

MATTEO GIANPIETRO ZAGO

Non-Financial Use Cases

Digital Content/Documents, Storage & Delivery	Authentication & Authorization	Digital Identity	Marketplace
BitProof, Blockcai, Ascribe, ArtPlus, Chainy.Link, Stampery, Blocktech (Alexandria), Bisantyum, Blockparti, The Rudimental, BlockCDN	The Real McCoy, Degree of Trust, Everpass, BlockVerify,	Sho Card, Uniquid, Onename, Trustatom	Providing premium rights & brand based coins: MyPowers

Smart Contracts	Real Estate	Diamonds	Gold & Silver	Reviews/Endorsement
Otonomos, Mirror, Symbiont, New system Technologies	Factom	Everledger	BitShares, Real Asset Co., DigitalTangible (Serica), Bit Reserve	TRST.im, Asimov (recruitment services), The World Table

Blockchain in IoT	App Development	Network Infrastructure & APIs	Other
Filament, Chimera-inc.io, ken Code — ePlug	Proof of ownership for modules in app development: Assembly	Ethereum, Eris, Codius, NXT, Namecoin, Colored Coins, Hello Block, Counterparty, Mastercoin, Corona, Chromaway, BlockCypher	Prediction platform: Augur Election Voting: Follow My Vote Patient Records management: BitHealth

Financial Use Cases

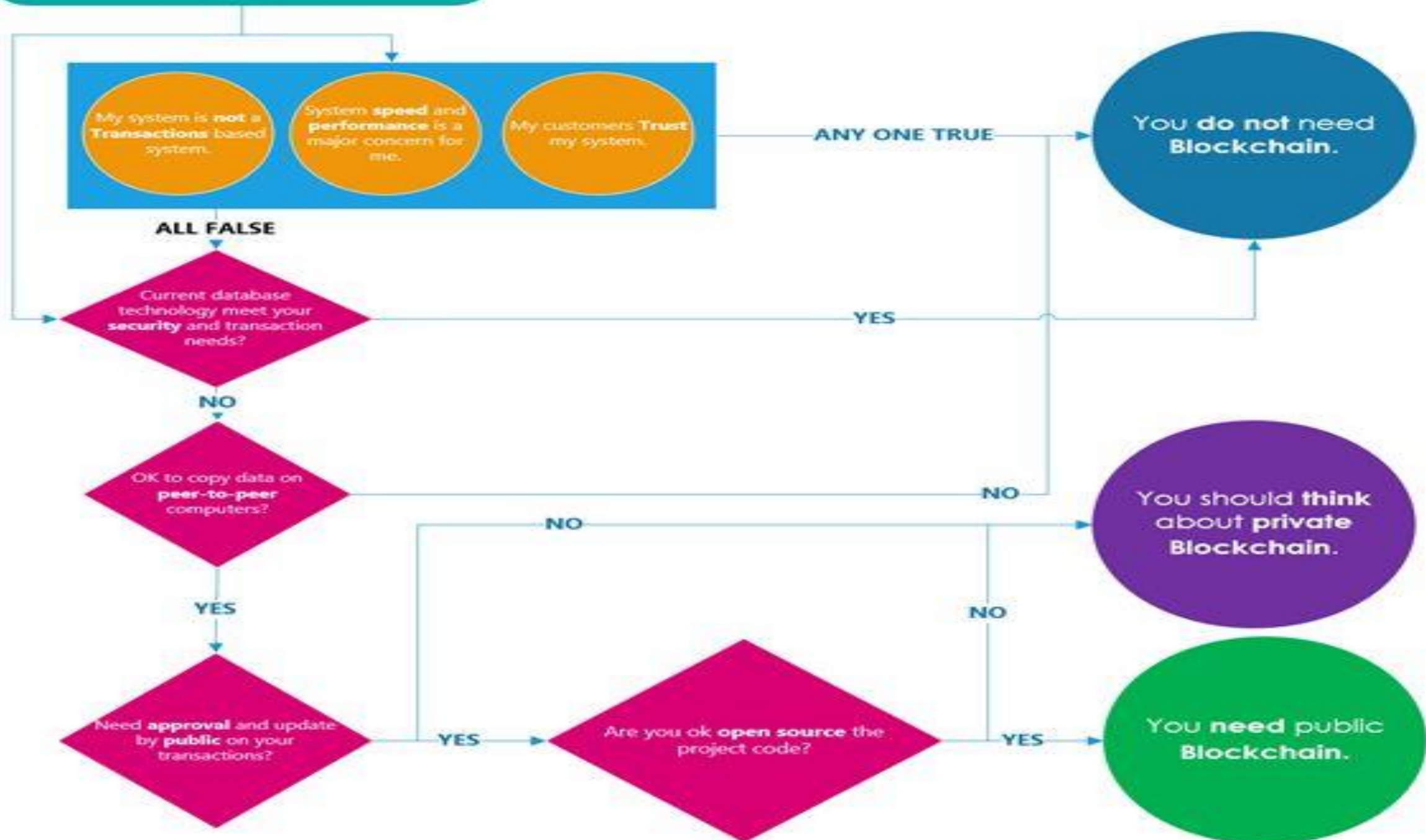| Currency Exchange & Remittance	P2P Transfers	Ride Sharing	Data Storage	Trading Platforms	Gaming
Coinbase (Wallet), BitPesa, Billion, Ripple, Stellar, Kraken, Fundrs.org, MeXBT, CryptoSigma	BTC Jam, Codius, BitBond, BitnPlay (Donation), DeBuNe (SME's B2B transactions)	La'zooz	Storj.io, Peernova	equityBits, Spritzle, Secure Assets, Coins-e, DXMarkets, MUNA, Kraken, BitShares	PlayCoin, Play(on DACx platform), Deckbound

Do You Need a Blockchain?

My system is **not** a **Transactions** based system.

System **speed** and **performance** is a major concern for me.

My customers **Trust** my system.

ANY ONE TRUE → You **do not** need Blockchain.

ALL FALSE

Current database technology meet your **security** and transaction needs?

YES → You **do not** need Blockchain.

NO

OK to copy data on **peer-to-peer** computers?

NO → You should **think** about **private** Blockchain.

YES

Need **approval** and update by **public** on your transactions?

NO → You should **think** about **private** Blockchain.

YES → Are you ok **open source** the project code?

NO → You should **think** about **private** Blockchain.

YES → You **need** public Blockchain.

Blockchain made Simple

- I am an Ambassador for NASGO, which will be launching their Blockchain internet platform called "Block Box" which is an easy-to-use toolbox (no coding skills required) to help businesses with solutions that create more loyal customers.

- Putting reward programs on the blockchain helps people make quicker and smarter decisions on which loyalty programs are best for their shopping habits and preferences.

- Cryptocurrency is changing the way the world does business. The Sharenode token offers you the ability to purchase affordable blockchain marketing tools and systems.

- The AMICO mobile app will have features that will bring systems together that the world has never seen.

- To learn more check out this interactive video at:

- https://umustsee.net/JIS8