Setting up
A Blockchain Venture

Salil Donde

On Monday We Discussed….

The Rise of Blockchain

- Financial Crisis of 2007-08
- Bitcoin – How it started

Blockchain Technology Today

- Bitcoin – The inner working
- The Underlying Principles
- The Technology / Platform
- Blockchain Benefits

For discussion today…

Blockchain – Current State

- Blockchain benefits
- The Digital Asset landscape
- Challenges

Application of block chain technology

- Starting a business using Blockchain technology? Few ideas to assist
- Use cases

Setting Up a Blockchain Venture : Salil Donde

What is Blockchain

1. Database

2. Transmission

3. Security

4. Access

Blockchain – Key Benefits

This system of organizing and storing information ensures a number of benefits

Immutability

- This system of organizing and storing information ensures several benefits.
- Since multiple copies of a block chain are kept and managed by consensus across a peer-to-peer network, no one peer can alter past transactions.

Security

- It is a fundamental cryptological law that it is relatively easy to set a problem that is very, very difficult to solve.
- What is relatively easy for a network of computers to do is, in practice, impossible even for much larger networks to undo.

Verifiability

- The combination of transparency and immutability also allows us to satisfy full public verifiability: anyone in the world can check for themselves that the rules of the system - in the case of digital currencies, that coins should be spent only once -are being followed.
- Whilst information cannot be manipulated, it can be easily verified thanks to the size and power of the network.

Resilience

- The distributed nature of the ledger makes it resilient. Even if many peers go offline, the information is still accessible.

Transparency

- The fact that all transactions are broadcast to all peers also makes the ledger transparent.
- However, the encrypted nature of the transactions means that privacy is also assured.

These benefits can be tuned and block chains tailored to their specific functions to ensure that issues such as privacy accountability, and transparency are tightly managed.

What are Crypto Networks and Why are Tokens Fundamental?

Crypto Networks are Internet 3.0

Crypto Networks are decentralized networks

Tokens are integral to how crypto Networks work

Definitions

"Public" or "Open" Networks

● Open source and "forkable": the network's entire source code is available under an open license, therefore anyone who wishes to can run a competing copy.

● Open to all participants: anyone who wants to join the network can operate a node that provides the network service – as opposed to so-called "permissioned" networks where access is gated.

PRIVATE or PERMISSIONED Networks are just that – limited to a private group or require permission to join. E.g. Enterprise Applications

"Utility" vs. Investment Function

Some crypto Networks and their associated tokens are expressly designed to function like investments – meaning, they have explicit profit-sharing or asset ownership functionality.

Utility or Security?
US Regulatory Test

Utility tokens give holders access to a specific protocol or network, oftentimes enabling them to use an associated product or service. With utility tokens, no ownership rights to the underlying company behind the associated product or service are granted to token holders.

Security tokens grant holders ownership rights to an underlying asset. In essence, they are asset investments governed by the protocol set forth by the associated blockchain

The Howey Test. If a token (or another instrument) meets all of the following criteria, the SEC considers it an "investment."

1. The user is investing money.

2. The user expects to profit from the investment.

3. The investment is in a "common enterprise."

4. Any profit comes from the efforts of a third-party or promoter.

Smart Contracts: Asset Ownership vs Activity Tracking

A smart contract is a computer program or a transaction protocol which is intended to automatically execute, control or document legally relevant events and actions according to the terms of a contract or an agreement.

An Ecosystem – Not a Company

Like the original internet, each crypto Network is an ecosystem, not a company.

While a crypto Network may initially be designed by a single group or company, ultimately the participants are independent actors.

Typically, each crypto Network has its own internal cryptocurrency or token or Smart Contract which serves many purposes within the network.

Decentralized

Decentralization is the critical architectural element of cryptonetworks, because, like the architecture of the original internet, it offers:

● Innovation

● Competition

● Crypto Networks also provide new functionality

Tokens provide the incentive mechanism for these decentralized, independent actors to work together to provide the network service.

Consensus

Key innovation of crypto Networks - ability to come to consensus on the "state" of the data

Many approaches to achieving consensus

      proof of work

      proof of stake

      proof of space-time

Governance

Since each crypto Network is an ecosystem of independent participants, the process of technical and policy decision-making, known generally as governance, differs significantly from that of a traditional technology company that can make unilateral decisions.

Tokens can also play a role in the governance process, for example via holding or "staking" tokens as part of participating in governance.

Central Role Of Tokens

As we have seen in the previous slides, the token is what ties the entire crypto Network together.

Network participants earn tokens – alignment to make network more functional

Ownership vs. Activity Ledgers

	"Asset Ownership Tracking"	**"Activity Register"**

What is being tracked?	• Changes of ownership of digital tokens
	• Tokens may be actual assets (e.g. BTC, XRP)
	• Tokens may also represent claims
		• Immutable timestamped data records
		• Underlying data can be anything -
		    • Trade Facts
		    • Identity information
		    • Newspaper headline
		    • Picture

What does Consensus denote?	• Network agrees said ownership changes are valid as per network rules • Network stores changes in ownership	Two categories for consensus - • **Relevant party consensus**, i.e. one or more parties agree on the content of some data • **Network consensus**, i.e. validating parties agree that the existence of data has been legitimately uploaded

Smart Contracts: Asset Ownership vs Activity Tracking

A smart contract is a computer program or a transaction protocol which is intended to automatically execute, control or document legally relevant events and actions according to the terms of a contract or an agreement.

The popular cryptocurrency and blockchain system Ethereum is based on the use of tokens, which can be bought, sold, or traded. Ethereum was launched in 2015. In the Ethereum system, tokens represent a diverse range of digital assets, such as vouchers, IOUs, or even real-world, tangible objects.

Essentially, Ethereum tokens are smart contracts that make use of the Ethereum blockchain.

Launching a Crypto Network: Typical Workflow

Pre-Launch: An individual, group or company designs a new crypto Network, its digital service, and its internal token or contract mechanism.

They may take investment in the form of equity financing, may pre-sell network tokens, or may require no outside capital at all (as was the case with Bitcoin).

Live Network: The network's source code is published, typically under an open source license that allows others to copy and modify it freely.

Other actors besides the original designers begin to operate "nodes" and play other roles in the network, including contributing to the codebase.

The network begins to operate, achieving consensus and producing a ledger or blockchain.

Tokens are distributed to users and other participants, typically earned as part of providing the network service (e.g., "mining") or granted as part of an "airdrop" or giveaway to seed the network.

The token acts as the internal currency and incentive mechanism, and plays a role in other processes.

Tokens may begin to trade on third-party exchanges.

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Many Applications

A failed example: Filecoin-File Storage
Noble idea, ahead of its time.
Unused storage globally
Filecoin (ƒ) is an open-source, public, cryptocurrency and digital payment system intended to be a blockchain-based cooperative digital storage and data retrieval method. It is made by Protocol Labs and builds on top of InterPlanetary File System, allowing users to rent unused hard drive space. Blockchain is used to register the deals. The project was launched in August 2017 and raised over $200 million within 30 minutes.

But what about privacy, security and "my data"

How Do You Sell Blockchain

1. ?

2. ??

3. ???

How Do You Sell Blockchain

1. You don't sell Blockchain

2. It's an enabling technology – you don't sell technology for the sake of technology

3. What is the purpose

4. What is the value creation and what is the value proposition

5. What is the business model

6. What is the sales strategy

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Challenges Stifling Mainstream (Institutional) Adoption

The Following Areas Need to be Addressed…

Clear Regulations

- Regulatory uncertainty

- Utility vs Security Tokens

- Appropriate licensing

Security

- Hacking & Theft

- Risk Management

- Peace of Mind
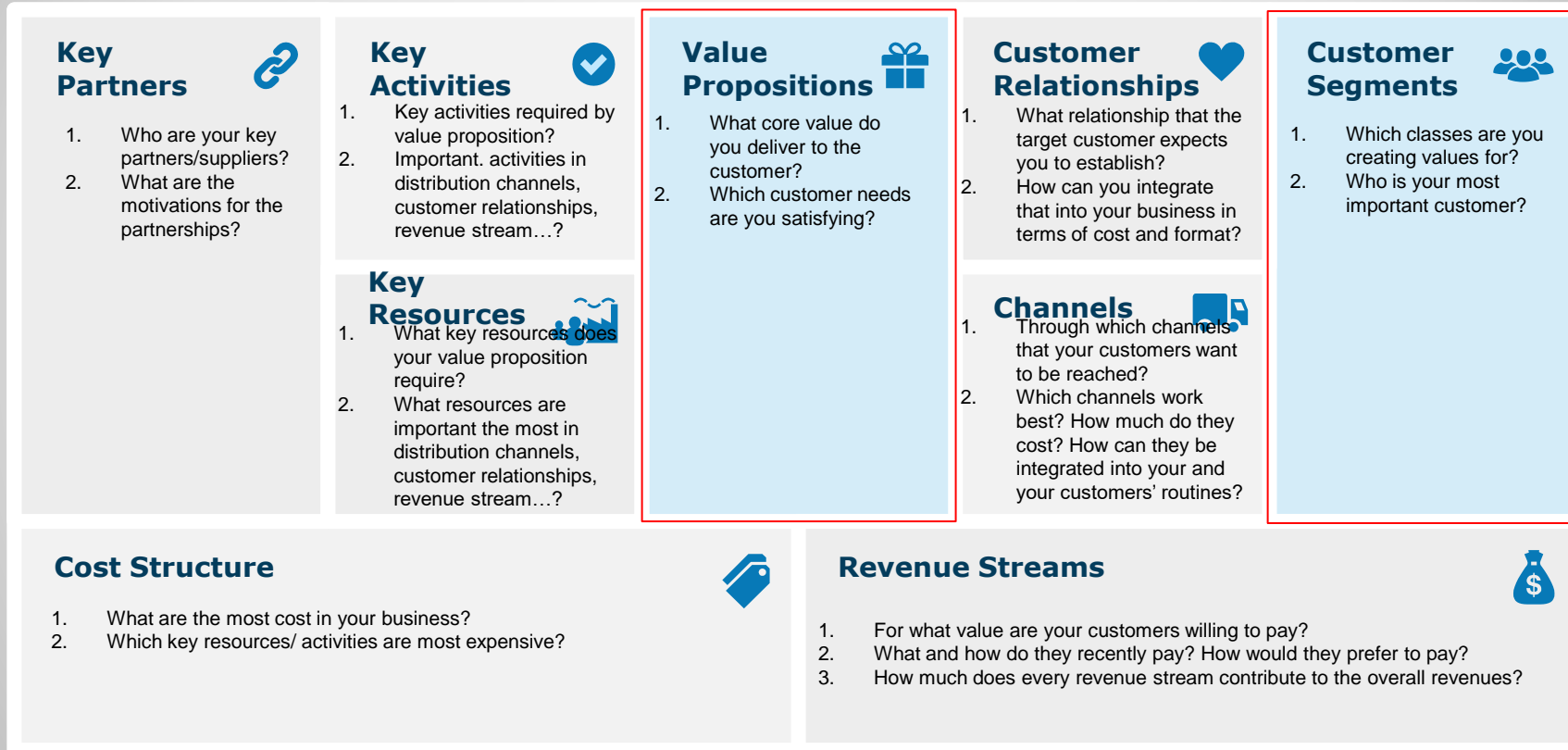
Custody

- Scalable Banking infrastructure

- Insurance & underwriting of assets
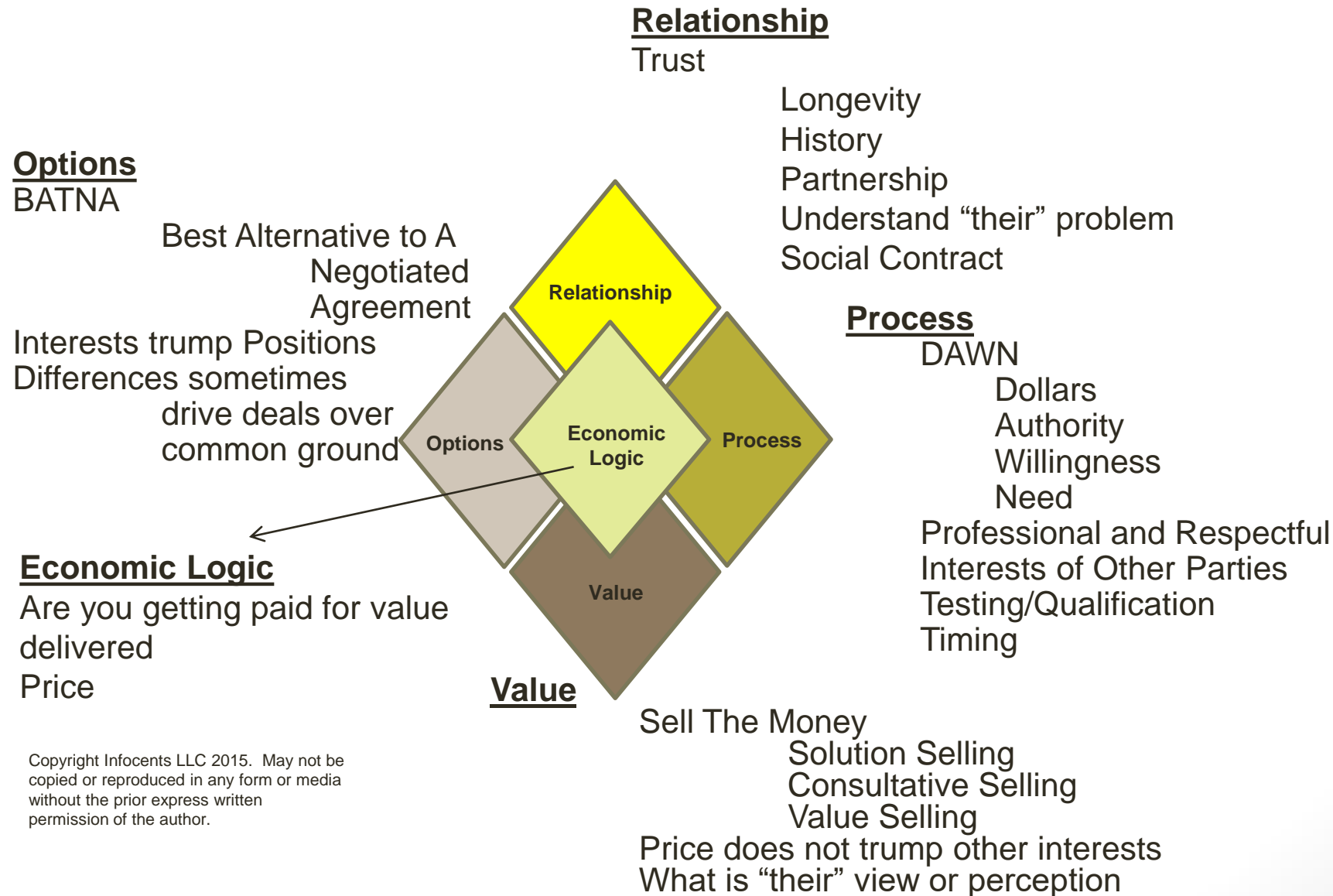
- Trusted brands & jurisdictions

Scalability

- Retail vs Institutional Trading Systems

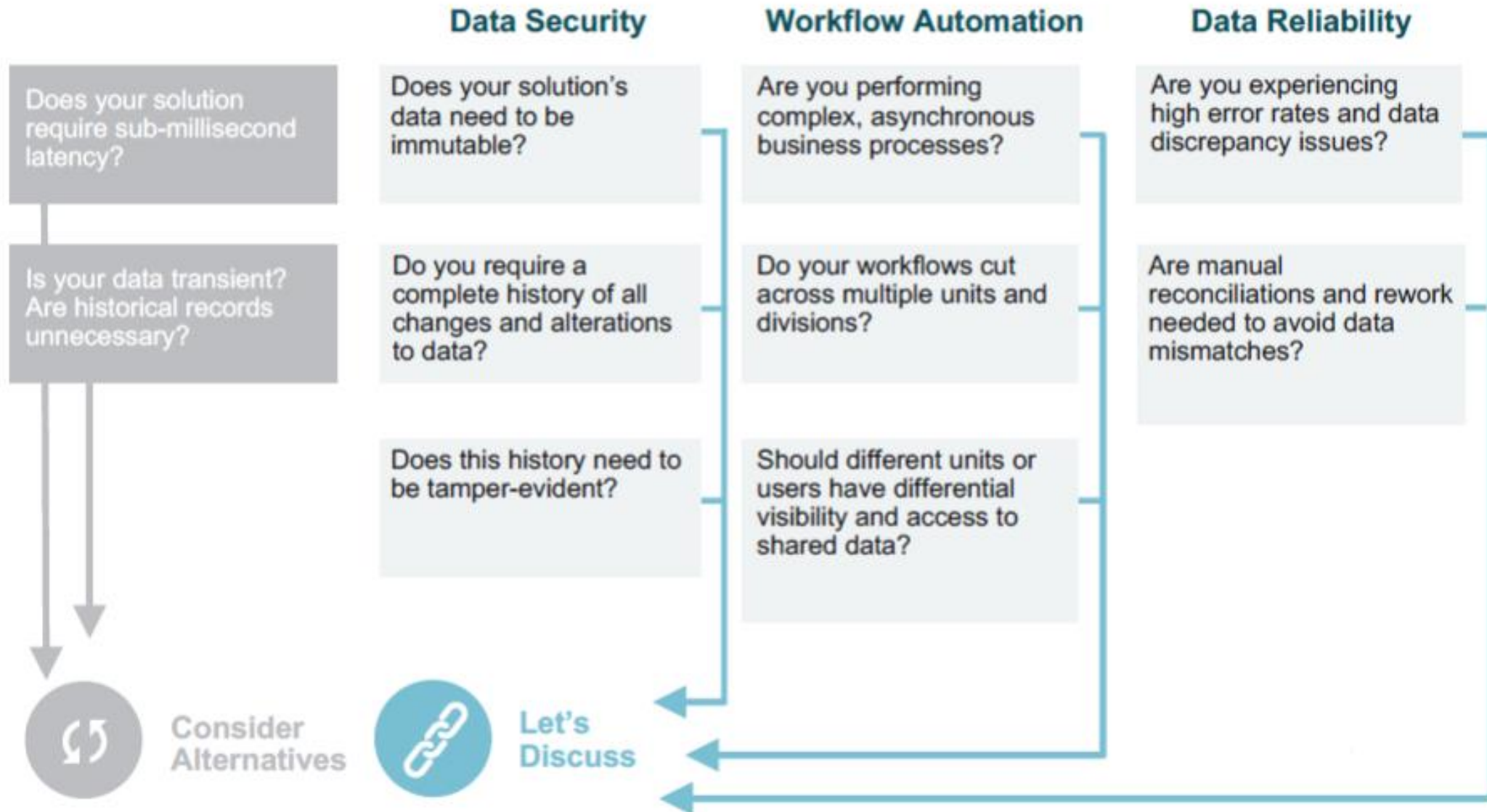- Blockchains that scale

- Interoperability

BUSINESS MODEL CANVAS

Key Partners
1. Who are your key partners/suppliers?
2. What are the motivations for the partnerships?

Key Activities
1. Key activities required by value proposition?
2. Important. activities in distribution channels, customer relationships, revenue stream…?

Key Resources
1. What key resources does your value proposition require?
2. What resources are important the most in distribution channels, customer relationships, revenue stream…?

Value Propositions
1. What core value do you deliver to the customer?
2. Which customer needs are you satisfying?

Customer Relationships
1. What relationship that the target customer expects you to establish?
2. How can you integrate that into your business in terms of cost and format?

Channels
1. Through which channels that your customers want to be reached?
2. Which channels work best? How much do they cost? How can they be integrated into your and your customers' routines?

Customer Segments
1. Which classes are you creating values for?
2. Who is your most important customer?

Cost Structure
1. What are the most cost in your business?
2. Which key resources/ activities are most expensive?

Revenue Streams
1. For what value are your customers willing to pay?
2. What and how do they recently pay? How would they prefer to pay?
3. How much does every revenue stream contribute to the overall revenues?

Foundation For A Sustainable Business

Sales Strategy: Product, Service, Business or Capitalization Deal

Relationship
Trust

Longevity
History
Partnership
Understand "their" problem
Social Contract

Options
BATNA

Best Alternative to A
Negotiated
Agreement
Interests trump Positions
Differences sometimes
drive deals over
common ground

Process
DAWN
Dollars
Authority
Willingness
Need
Professional and Respectful
Interests of Other Parties
Testing/Qualification
Timing

Economic Logic
Are you getting paid for value delivered
Price

Value
Sell The Money
Solution Selling
Consultative Selling
Value Selling
Price does not trump other interests
What is "their" view or perception

Relationship

Options   Economic Logic   Process

Value

When to build on Blockchain

Data Security

Does your solution's data need to be immutable?

Do you require a complete history of all changes and alterations to data?

Does this history need to be tamper-evident?

Workflow Automation

Are you performing complex, asynchronous business processes?

Do your workflows cut across multiple units and divisions?

Should different units or users have differential visibility and access to shared data?

Data Reliability

Are you experiencing high error rates and data discrepancy issues?

Are manual reconciliations and rework needed to avoid data mismatches?

Does your solution require sub-millisecond latency?

Is your data transient? Are historical records unnecessary?

Consider Alternatives

Let's Discuss

Source: altcurrencyhelp.com

Application Sampling

International Payments

- Blockchain provides a way to securely and efficiently create a tamper-proof log of sensitive activity. This makes it excellent for international payments and money transfers.

Capital Markets

- Blockchain-based systems also have the potential to improve capital markets.

- Faster clearing and settlement

- Consolidated audit trail

- Operational improvements

Trade Finance

- Historic methods of trade financing have been a major pain point for businesses because the slow processes often interrupt business and make liquidity hard to manage. Cross-border trade involves a large number of variables when communicating information – such as country of origin and product details – and transactions generate high volumes of documentation.

Regulatory Compliance and Audit

The extremely secure nature of blockchain makes it rather useful for accounting and auditing because it significantly decreases the possibility of human error and ensures the integrity of the records. On top of this, no one can alter the account records once they are locked in using blockchain tech, not even the record owners. The trade off here is that blockchain tech could ultimately eliminate the need for auditors and erase jobs.

Money Laundering Protection

- Once again, the encryption that is so integral to blockchain makes it exceedingly helpful in combating money laundering. The underlying technology empowers record keeping, which supports "Know Your Customer (KYC)," the process through which a business identifies and verifies the identities of its clients.

Insurance

- Arguably the greatest blockchain application for insurance is through smart contracts. These contracts allow customers and insurers to manage claims in a transparent and secure manner. All contracts and claims can be recorded on the blockchain and validated by the network, which would eliminate invalid claims, since the blockchain would reject multiple claims on the same accident.

Peer-to-Peer Transactions

- P2P payment services such as Venmo are convenient, but they have limits. Some services restrict transactions based on geography. Others charge a fee for their use. And many are vulnerable to hackers, which is not appealing for customers who are putting their personal financial information out there. Blockchain technology, with all its aforementioned benefits, could fix these roadblocks.

Supply Chain Management

- Blockchain's immutable ledger makes it well suited to tasks such as real-time tracking of goods as they move and change hands throughout the supply chain. Using a blockchain opens up several options for companies transporting these goods. Entries on a blockchain can be used to queue up events with a supply chain — allocating goods newly arrived at a port to different shipping containers, for example. Blockchain provides a new and dynamic means of organizing tracking data and putting it to use.

Healthcare

- Health data that's suitable for blockchain includes general information like age, gender, and potentially basic medical history data like immunization history or vital signs. On its own, none of this information would be able to specifically identify any particular patient, which is what allows it to be stored on a shared blockchain that could be accessed by numerous individuals without undue privacy concerns.

Real Estate

- The average homeowner sells his or her home every five to seven years, and the average person will move nearly 12 times during their lifetime. With such frequent movement, blockchain could certainly be of use in the real estate market. It would expedite home sales by quickly verifying finances, reduce fraud thanks to its encryption, and offer transparency throughout the entire selling and purchasing process.

Media

- Media companies have already started to adopt blockchain technology to eliminate fraud, reduce costs, and even protect Intellectual Property (IP) rights of content – like music records. According to MarketWatch, the global market for blockchain in media and entertainment is estimated to reach $1.54 billion by 2024.

Energy

- Blockchain technology could be used to execute energy supply transactions, but also to further provide the basis for metering, billing, and clearing processes. Other potential applications include documenting ownership, asset management, origin guarantees, emission allowances, and renewable energy certificates.

Record Management

- National, state, and local governments are responsible for maintaining individuals' records such as birth and death dates, marital status, or property transfers. Yet managing this data can be difficult, and to this day some of these records only exist in paper form. And sometimes, citizens have to physically go to their local government offices to make changes, which is time-consuming, unnecessary, and frustrating. Blockchain technology could simplify this recordkeeping and make the data far more secure.

- **Identity Management**
- Proponents of blockchain tech for identity management claim that with enough information on the blockchain, people would only need to provide the bare minimum (date of birth, for example) to prove their identities.
- **Voting**
- Blockchain technology has the ability to make the voting process more easily accessible while improving security. Hackers would be no match to blockchain technology, because even if someone were to access the terminal, they wouldn't be able to affect other nodes. Each vote would be attributed to one ID, and with the ability to create a fake ID being impossible, government officials could tally votes more efficiently and effectively.

Taxes

- Blockchain tech could make the cumbersome process of filing taxes, which is prone to human error, much more efficient with enough information stored on blockchain.

Non-Profit Agencies

- Blockchain could solve the trust problems charities are increasingly facing through greater transparency; the technology has the ability to show donors that NPOs are in fact using their money as intended. Furthermore, blockchain tech could help those NPOs distribute those funds more efficiently, manage their resources better, and enhance their tracking capabilities.

- **Compliance/Regulatory Oversight**

- The majority of regulatory oversight stems from recordkeeping, but the consequences of not maintaining records is inarguably much worse. Thus, compliance is non-negotiable for companies. Blockchain can make record updates available to regulators and businesses in real time, in turn reducing time lags and allowing red flags and inconsistencies to be spotted sooner.

Financial Management and Accounting

- If the blockchain is truly as secure as it has shown itself to be in the last several years, then such impenetrable security would be tantalizing for customers concerned with financial fraud.

Record Management

- As stated earlier, the encryption that is central to blockchain makes it quite useful for record management because it prevents duplicates, fraudulent entries, and the like.

Cybersecurity

- The biggest advantage for blockchain in cybersecurity is that it removes the risk of a single point of failure. Blockchain tech also provides end-to-end encryption and privacy.

Big Data

- The immutable nature of blockchain, and the fact that every computer on the network is continually verifying the information stored on it, makes blockchain an excellent tool for storing big data.

Data Storage

- The same principles for big data apply to data storage, as well.

IoT

- Blockchain is poised to transform practices in a number of IoT sectors, including:

- The supply chain: Tracking the location of goods as they are shipped, and ensuring that they stay within specified conditions.

- Asset tracking: Monitoring assets and machinery to record activity and output as an alternative to cloud solutions.

Should Amazon issue a token?

Figure: Illustrative example of a token for a digital based business
Simply a concept, please do not judge this to be a business plan

Customer Operations

Capital Structure

Purchases goods

Speculate on user growth

amazon customer

a token

Equity (AMZN owns 33% tokens)

Writes engaging reviews

Speculate on spending
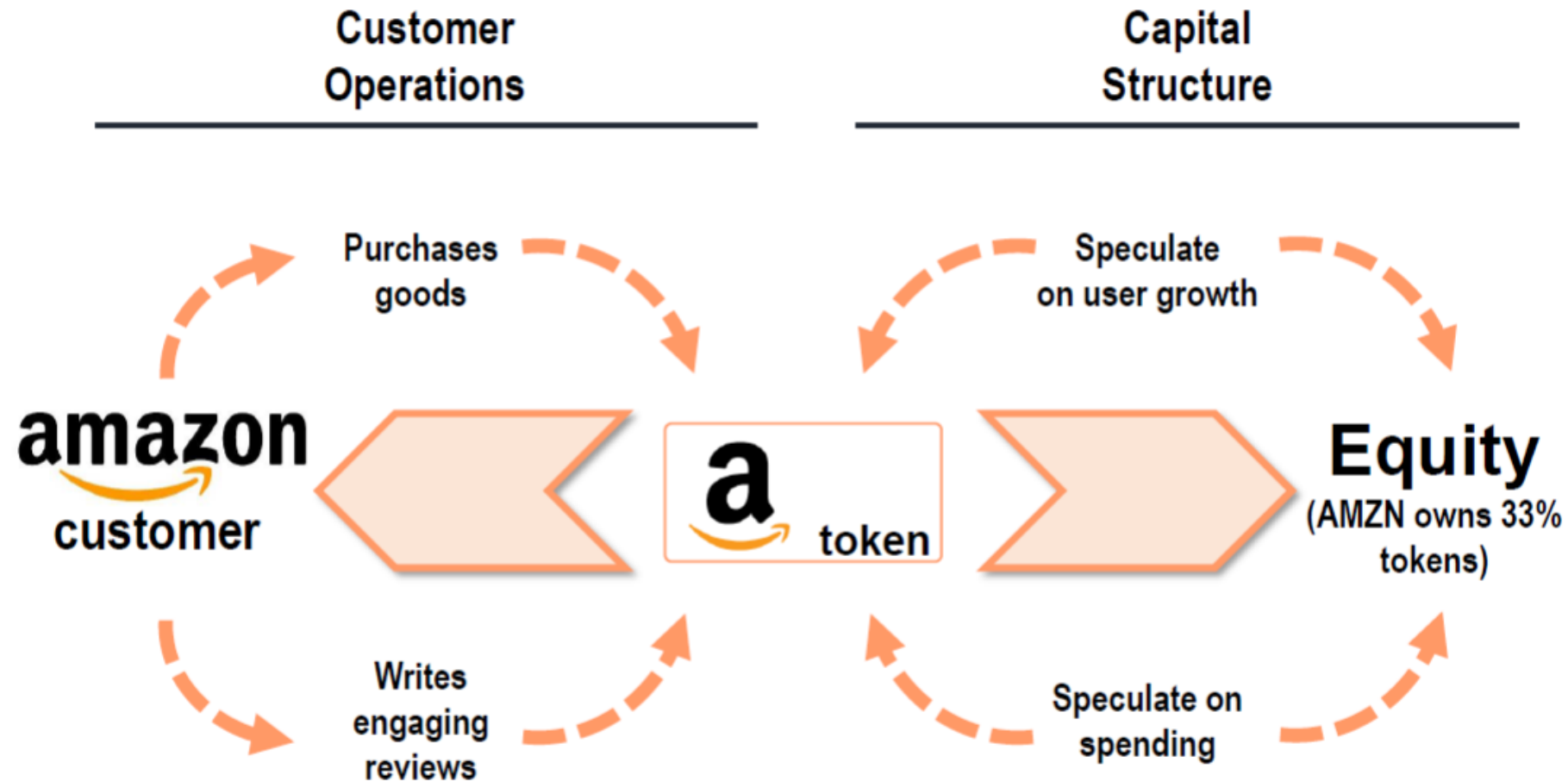
Blockchain in action – Financial services

Distributed ledger technology (DLT), more commonly called "blockchain", has captured the imaginations, and wallets, of the financial services ecosystem

ECONOMIC FORUM
COMMITTED TO IMPROVING THE STATE OF THE WORLD

24+ countries currently investing in DLT — **Global interest**

Research — **2,500+** patents filed over the last **3** years

DLT activity

Bank experimentation — **80%** of banks predicted to initiate DLT projects

90+ corporations have joined blockchain consortia — **Consortium efforts**

Venture capital — Over **US$ 1.4 billion** in investments over the past **3** years

Central banks — **90+** central banks engaged in DLT discussions worldwide

Awareness of DLT has grown rapidly, but significant hurdles remain to large-scale implementation

An uncertain and unharmonized regulatory environment

Nascent collective standardization efforts

An absence of formal legal frameworks

Figure: Examples of fractionalization to digital asset tokenization
Not a complete list

1972: Frequent Flyer Miles
the very first modern frequent-flyer program was created in 1972 by Western Direct Marketing, for United Airlines.

1970: Mortgage Securitization
The U.S. Department of Housing and Urban Development created the first mortgage-backed security. Ginnie Mae mortgage loans.

1969:Time-shares
The first non-hotel timeshare in the US was the Kaua`i Kailani, started in Kauai, Hawaii in 1969 by the people who later founded Vacation Internationale.

1987: Netjets fractional jet ownership
In 1987, the NetJets program was officially announced becoming the first fractional aircraft ownership format in history.

2009: Kickstarter
Kickstarter launched on April 28, 2009, by Perry Chen, Yancey Strickler, and Charles Adler.

2009: Uber
Founded ias UberCab by Garrett Camp, the cofounder of StumbleUpon, and Travis Kalanick.

2008: Airbnb
Brian Chesky and Joe Gebbia came up with the idea of putting an air mattress in their living room and turning it into a bed and breakfast.
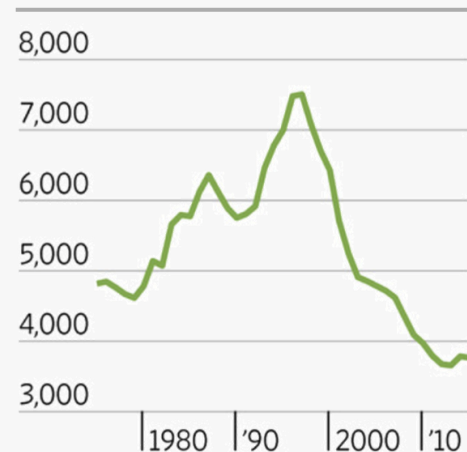
2017: Venezuelan Oil
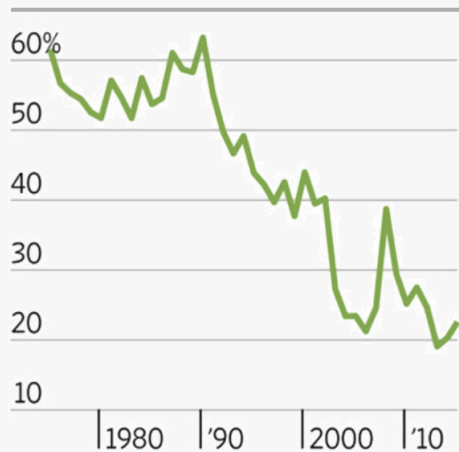Venezuela plans to issue a crypto currency backed by oil

Share Ownership: *Participation in Partial Ownership of Companies*

The Shrinking Stock Market

Getting Old, Staying Private

Fewer Companies Listed

Amount of Small Cap Companies Decreasing

of Start-ups >$1bn in Value Going Public

Average Annual Time from First Financing to Major Liquidity Event

Have Not Outperformed the Market Since the 1980s
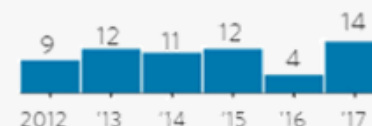
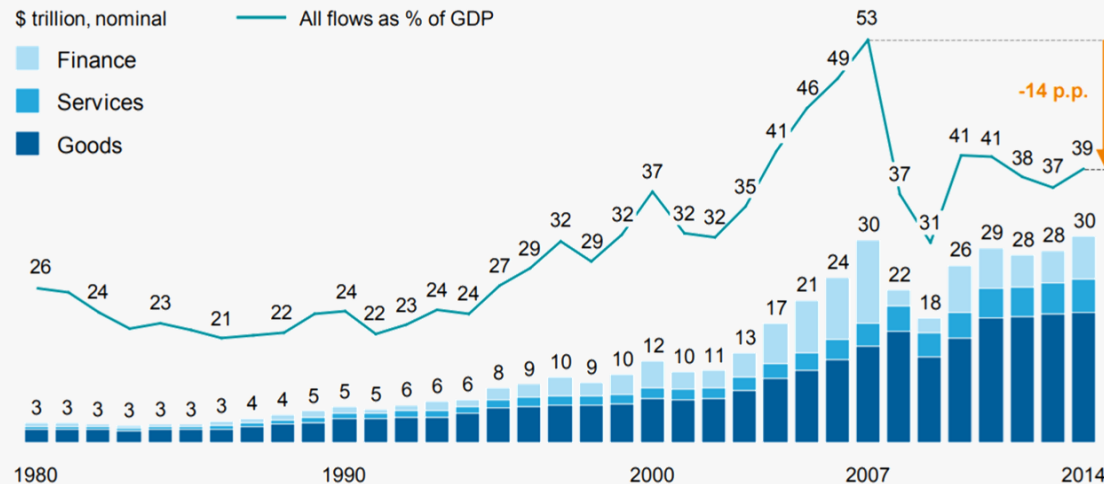### VC-backed Companies >$1bn in Value

Digital Flows Continue to Permeate the Global Economy

After 20 Years of Rapid Growth, Traditional Flows of Goods, Services, and Finance Have Declined Relative to Global GDP

Cross-Border Data Flows Surging, Connecting More Countries: 45x Bandwidth Increase, 2005 – 2014

Flow of Goods, Services, Finance: 1980 – 2014

2005
100% = 4.7 Terabits per second (Tbps)

2014
100% = 211.3 Tbps

45x larger
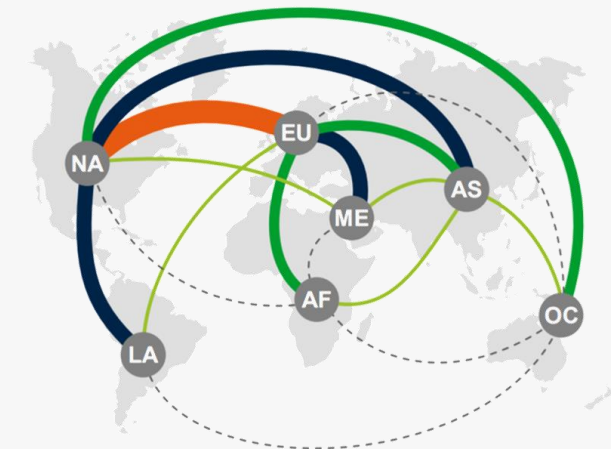
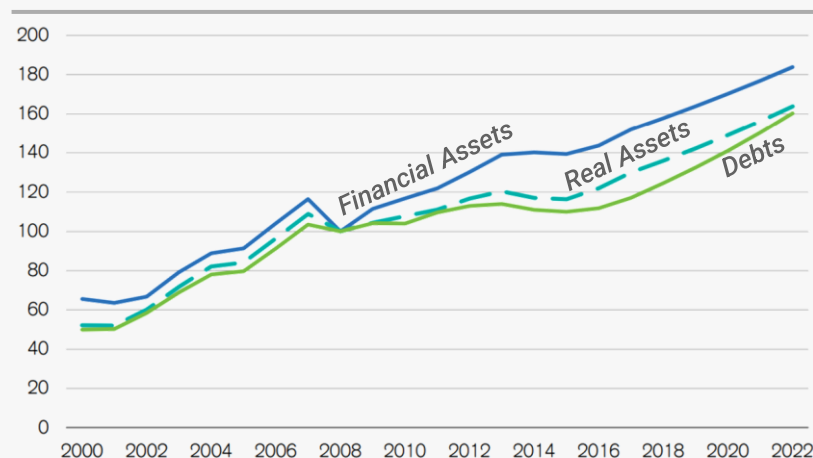| Regions	NA	EU	AS	LA	ME	AF	OC
	United States and Canada	Europe	Asia	Latin America	Middle East	Africa	Oceania

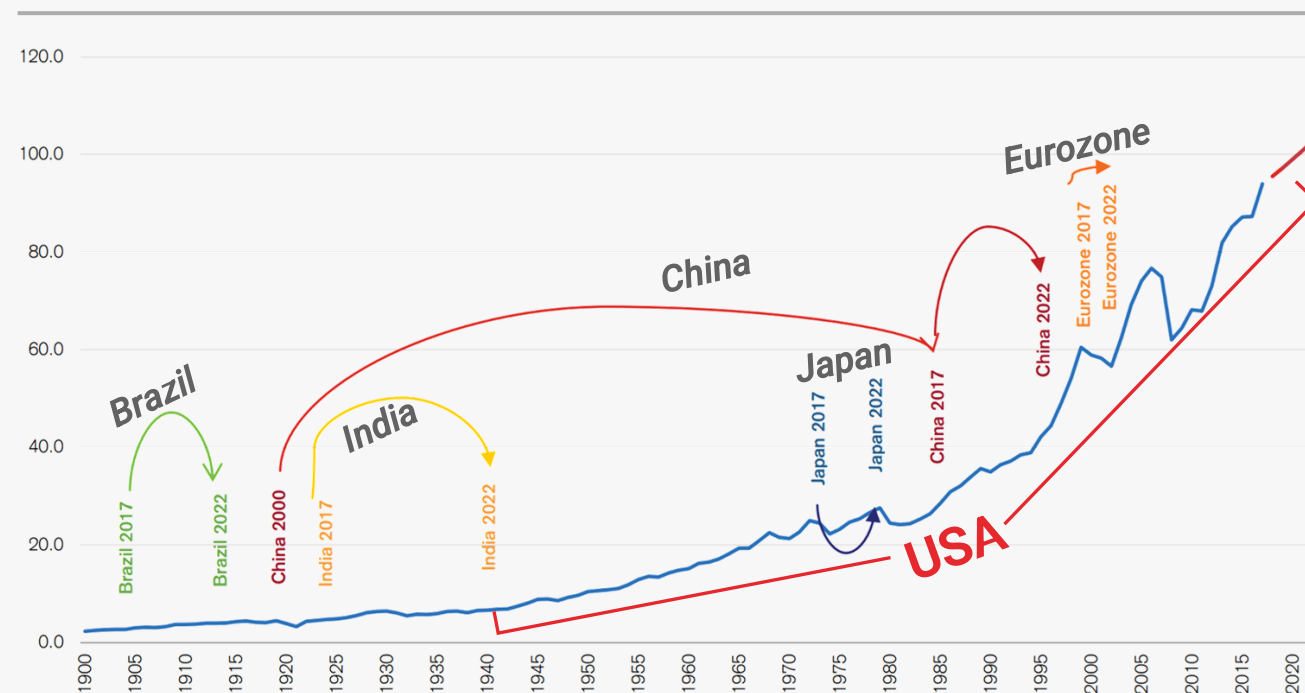# Global Wealth Generation Continues to Rise…

Cumulative Change in Millionaires, by Region / Income Group
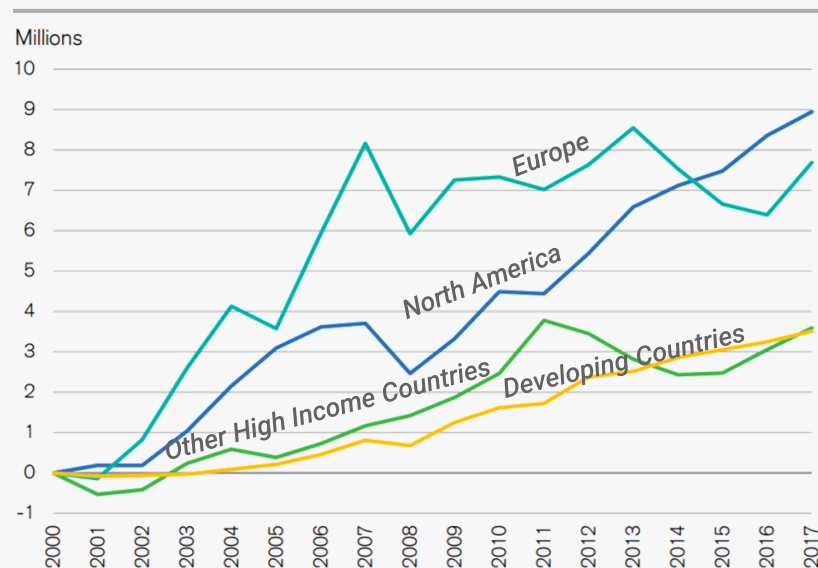
Global Wealth Breakdown

Total Wealth in the USA Relative to Select Global Economies ($trn)

Block Chain Technology : Salil Donde

Future of Wealth Creation: *Major Asset Classes: ~$52 Trillion*[1]

Financial Assets ~$47 Trillion		Real Assets ~$2.5 Trillion		Debt ~$2 Trillion	
Fiat Currencies[2]	~$40 Trillion	Commodities[4]	~$2.3 Trillion	Securitized Assets[5]	~$2 Trillion
Private Capital	~$5 Trillion	Exclusive Goods	~$150 Billion		
Natively Digital[3]	~$2 Trillion				

Note: Unless indicated otherwise, figures above are in USD, global market sizes, and for FY16
1) Sources include: Gold.org, BP World Energy Review, Knight Frank Luxury Index, 2016 US SIFT report, McKinsey & Co. Global Private Markets Review, Coin Market Cap Index, The Money Project
2) Defined as the total value of the world's easily accessible money supply (including coins, banknotes and checking deposits), as defined by The Money Project
3) September 2017 cryptocurrency trade volume annualized
4) Each commodity's USD figure above represents the total globally aggregated physical above ground supply generated during FY16
5) US (domestic) market size figure - does not incorporate international markets into sizing

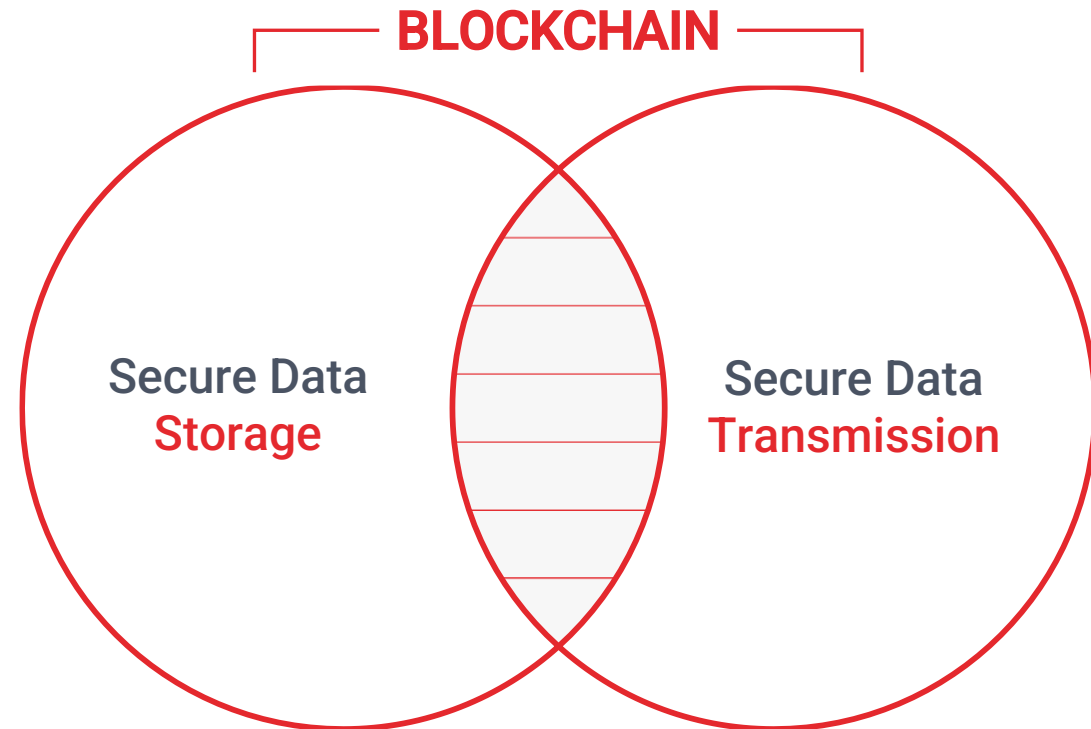# Blockchain is the Enabler of Wealth Creation

Financial Assets

Real Assets

Debt

BLOCKCHAIN

Secure Data **Storage**

Secure Data **Transmission**
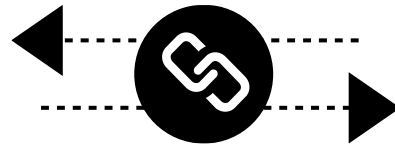
Five Things that Make an Asset Illiquid

1. **No Price Discovery:** obstacle presented by limited marketplace

2. **Lack of Transparency:** value of asset hidden

3. **High Counterparty Risk:** uncertain other party will be able to meet its obligations

4. **No Guarantee of Settlement:** risk of receiving what you signed on for (i.e. fraud or miscalculation)

5. **High Frictional Costs:** excessive transaction fees or hidden costs

Block Chain Technology : Salil Donde

Assets in Circulation

```
                          Major Asset Classes[1]
                             ~$11 Trillion
```

Commodities[2] $2.3 Trillion	Exclusive Goods $150 Billion	Securitized Assets (US) $2 Trillion	Private Capital $4.5-5.5 Trillion	Natively Digital Assets $1.9 Trillion

Sample Asset Classes

- Gold: $200bn
- Silver: $17bn
- Platinum: $7bn
- Lithium: $280bn
- Crude Oil: ~$2trn

Sample Asset Classes

- Fine Art: $45bn (global art sales)
- Collectible Cars: ~$2bn (US / public auctions only)
- Wine: ~$15bn
- Coins: ~$5bn (US only)
- Jewelry: $80bn (diamond jewelry market only)

Sample Asset Classes

- Mortgage: ~$2trn (US only issuance)
- Automotive: $93bn (US only issuance)
- Credit Card Receivables: $27bn (US only issuance)
- Student Loans: $16bn (US only issuance)

Sample Asset Classes

- Private Equity: $2.5trn AUM
- Real Estate: $800bn AUM
- Private Debt: $550bn AUM
- Natural Resources: $450bn AUM
- Infrastructure: $400bn AUM

Sample Asset Classes

- Digital Currencies[3]: ~$1.7trn (annual trade volume)
- ICOs: ~$2.3bn raised (Sept17 YTD)

Note: Unless indicated otherwise, figures above are in USD, global market sizes, and for FY16
1) Sources include: Gold.org, BP World Energy Review, Knight Frank Luxury Index, 2016 US SIFT report, McKinsey & Co. Global Private Markets Review, Coin Market Cap Index for all other sources, see Appendix
2) Each commodity's USD figure above represents the total globally aggregated physical above ground supply generated during FY16
3) September 2017 trade volume annualized

- Gold, for example, is an illiquid asset ($200bn+ market opportunity)

- Current financial instruments are mostly cash settled

- Creation of a token backed by physical gold (real world asset)

- Price discovery & liquidity for market participants

- Trading & Exchange Venue for Spot Gold

- Cryptographically – secured using distributed ledger & exchange platform

Use Case: Currencies

- National currencies ($40+ trillion market opportunity) digitized on a blockchain network allow for near-instant peer-to-peer transactions

- Transfer payment across currencies, almost instantaneously for a fraction of today's costs

- Rapid Payment Processing and Settlement

- Greatly reduced FX processing times, processing fees, and reliance on intermediaries

- All crypto, fiat currencies, and advanced trade types

Use Case: Private Shares

- Digitize Private Company Shares ($2.5 trillion market opportunity) – each share is representative of a token

- No readily available secondary market (increased flexibility and capital opportunities for shareholders)

- Real-time transparency into ownership structure – certainty for investors, insight for private companies

- Streamlined costs, removing need for pen-and-paper or spreadsheet-based recordkeeping

- Accredited investors

- Private or Public on the exchange

Use Case: Bonds, Loan Portfolios, ABS

- ~$2T in securitized assets alone

- Bilateral trade

- Highly opaque as to loan or bond composition

- Each loan or a pool or a security could be a token

- No readily available secondary market

- Real-time transparency into pool and collateral

- Fine art collections (~$50bn market opportunity) are highly illiquid as an asset class

- Sale of an art asset in current market is typically an "all or nothing" sale (i.e. not sold incrementally)

- Tokenizing art creates liquidity for collectors without necessitating the sale of the entire work

- The piece could be held in custody by a museum while the ownership rights would be traded via a smart contract

- Blockchain facilitates price discovery & liquidity for market participants