Blockchain & Digital Transformation

Gheis Mohammadi

Introduction

- Background
- Overview

Agenda

- History of Blockchain
- Centralized and Decentralized Networks
- Basic Concept of Blockchain
- Blockchain Platforms
- Basic Concept of Crypto Currencies
- Digital Transformation and Blockchain Applications
- Markets & Jobs
- Future

Historical Background of Blockchain

Phase 1

A cryptographically secured chain of blocks is described for the first time by **Stuart Haber** and **W.Scott Stornetta**.

Phase 1

Computer scientist **Nick Szabo** works on ‘bit gold’, a decentralized digital currency.

Phase 2

Stefan Konst published his theory of cryptographic secured chains, plus ideas for implementation

Phase 2

Developer(s) working under the pseudonym **Satoshi Nakamoto** released a white paper establishing the model for a blockchain

Phase 2

Nakamoto implemented the first blockchain as the public ledger for transactions made using bitcoin.

Phase 2

Blockchain technology is separated from the currency and its potential for other financial, inter-organizational transactions are explored. Blockchain 2.0 is born

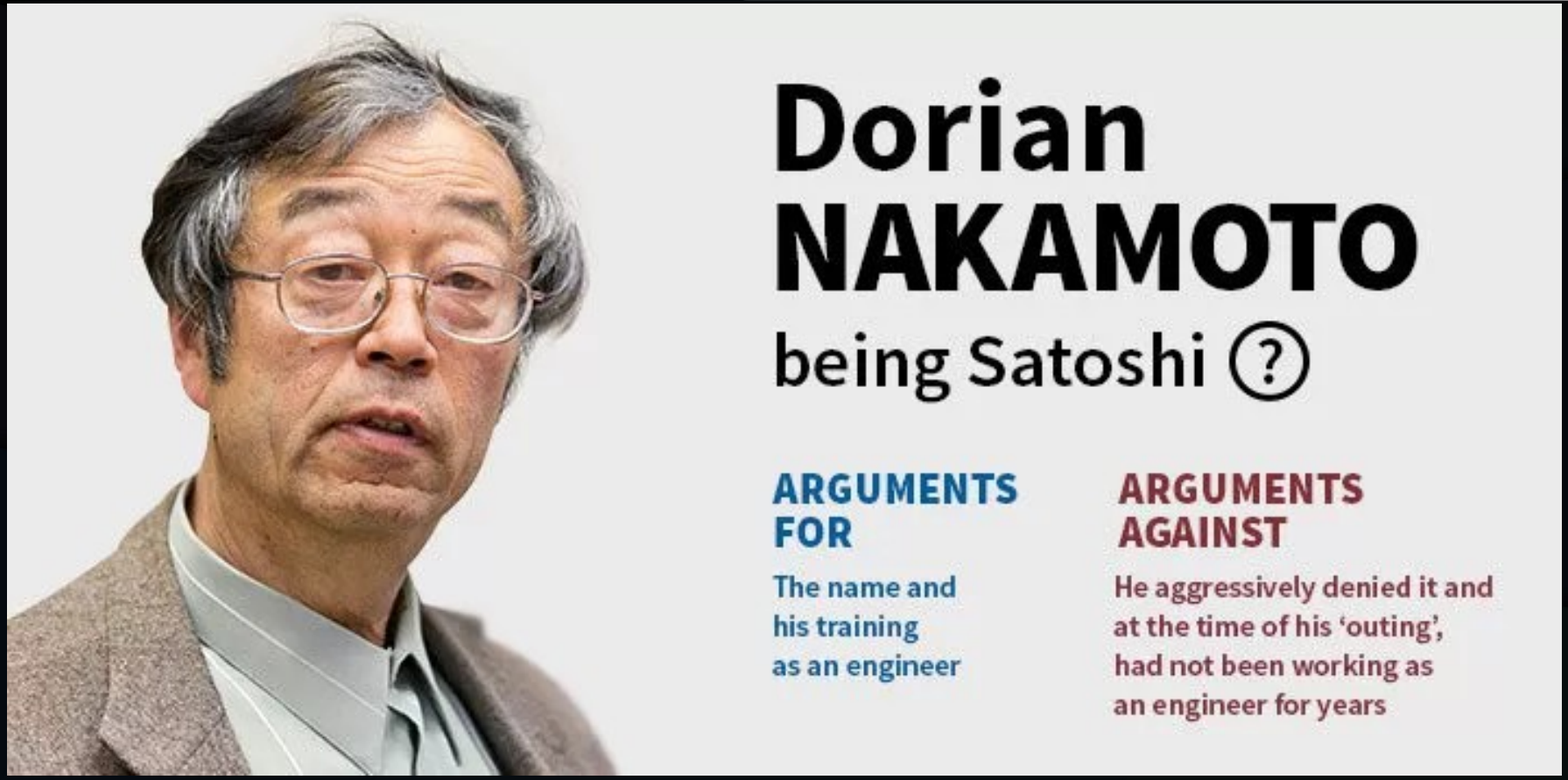
Phase 3

multi-applications of blockchain

Bitcoin Key Highlights

- October 31, 2008: Bitcoin white paper published by the anonymous Satoshi Nakamoto.
- January 3, 2009: 30,000 lines of C++ code spelled out the beginning of Bitcoin. The Genesis Block is mined.
- January 12, 2009: The first Bitcoin transaction.
- December 16, 2009: Version 0.2 is released.
- In 2010 selling Pizza from a handful of merchants. Today, the amount of bitcoin used to purchase those pizzas is valued over $100 million
- November 6, 2010: Market cap value exceeds $1 million USD.
- Spring 2011, BitPay, The largest merchant services provider in Bitcoin history began
- In 2011, the Silk Road, an online marketplace for illegal drugs, launched. It used bitcoin as its chief form of currency.
- On April 23, 2011, Nakamoto sent Bitcoin Core developer Mike Hearn a brief email. “I've moved on to other things,". The future of Bitcoin, he wrote, was "in good hands."

Satoshi Nakamoto

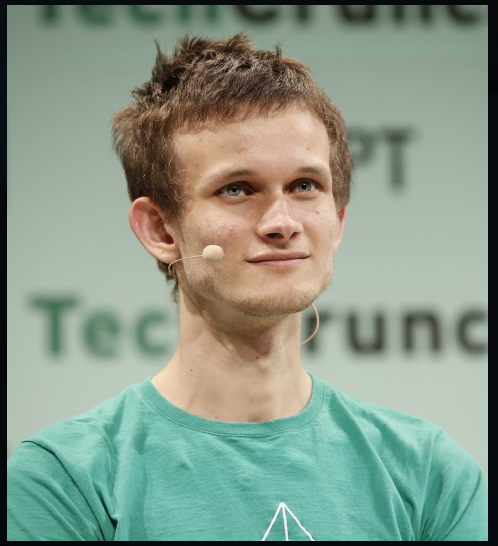


Satoshi Nakamoto

Craig Wright
an Australian computer scientist and businessman

Nick Szabo

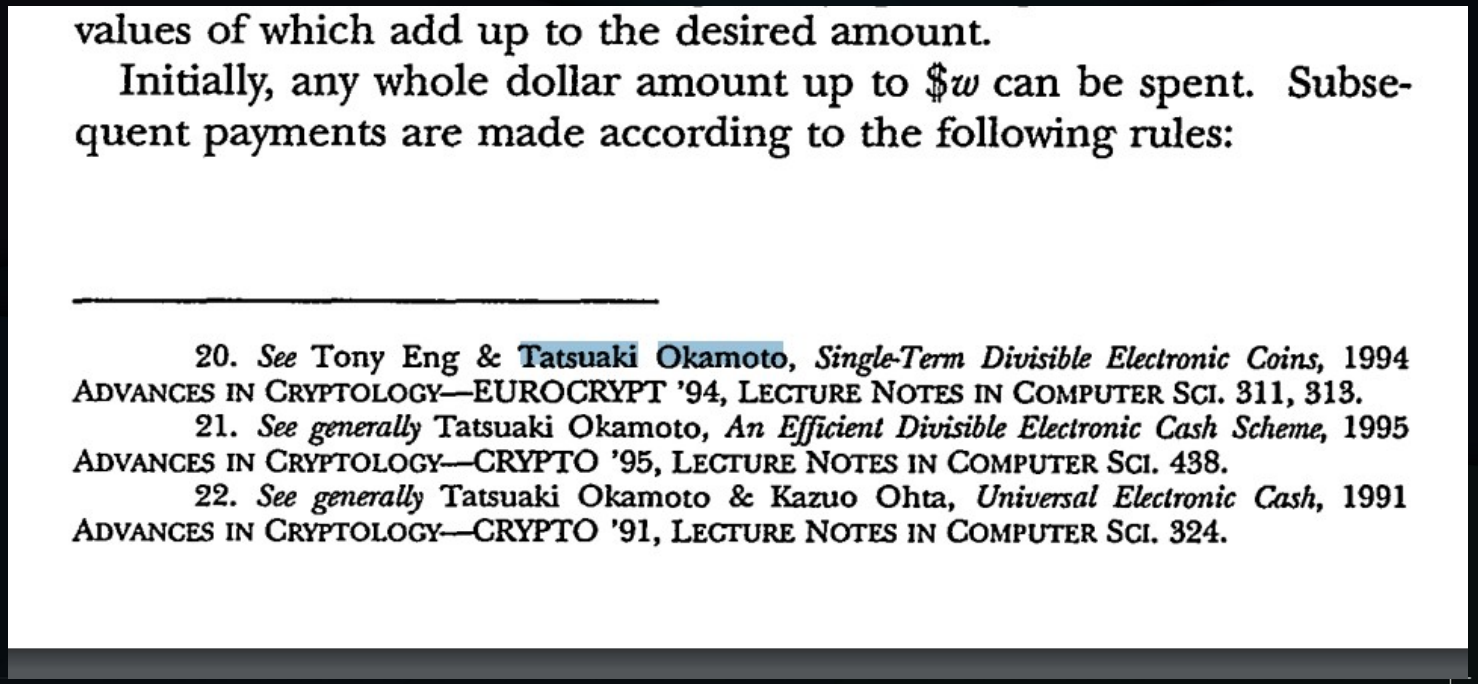
("bit gold" in the late '90s)
"Not Satoshi, but thank you."



Vitalik buterin

HOW TO MAKE A MINT: THE CRYPTOGRAPHY OF ANONYMOUS ELECTRONIC CASH

- https://groups.csail.mit.edu/mac/classes/6.805/articles/money/nsamint/nsamint.htm
- https://digitalcommons.wcl.american.edu/cgi/viewcontent.cgi?article=1389&context=aulr
- National Security Agency Office of Information Security Research and Technology
- Cryptology Division
- 18 June 1996



values of which add up to the desired amount.

Initially, any whole dollar amount up to $\$w$ can be spent. Subsequent payments are made according to the following rules:

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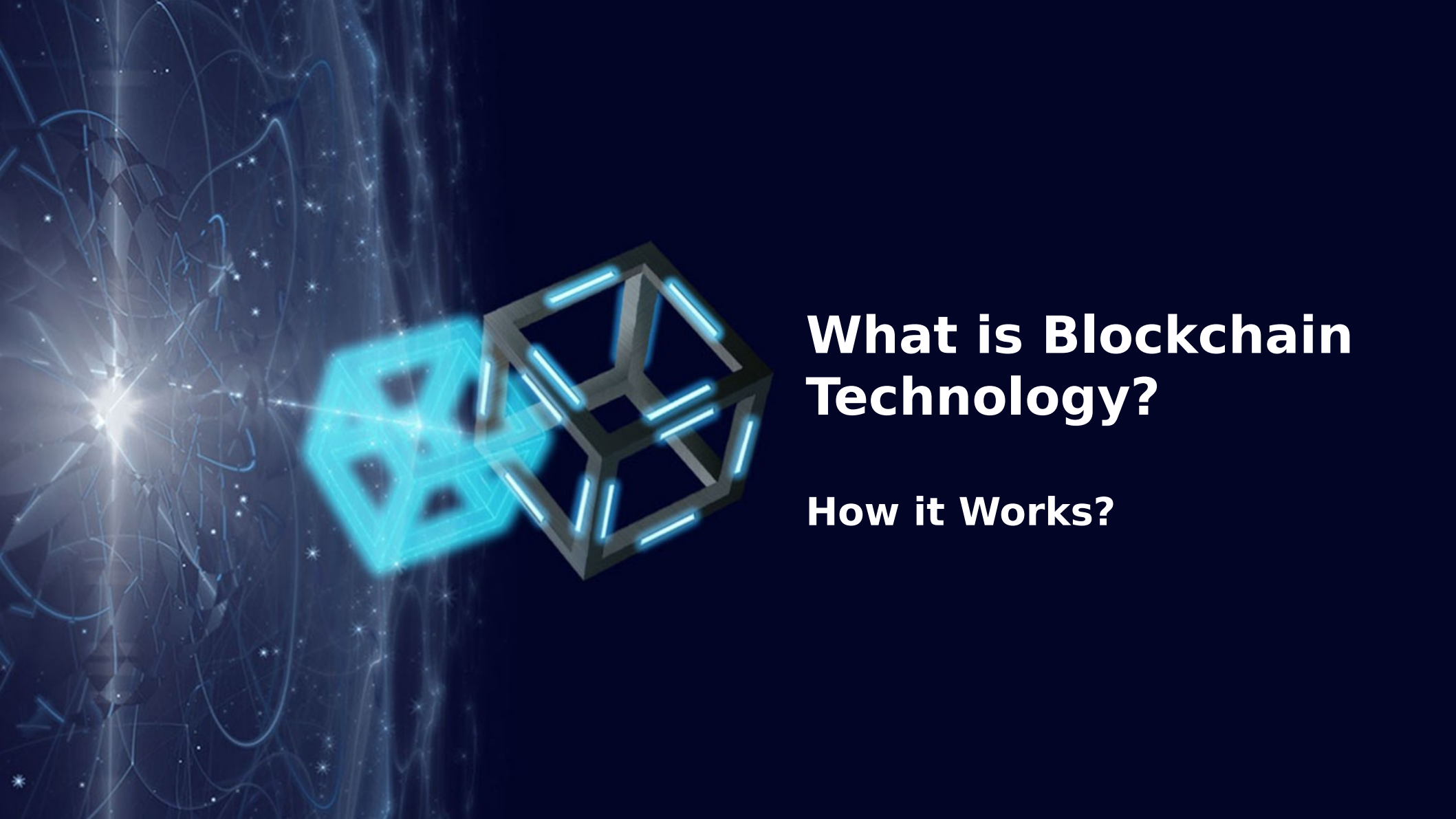
20. *See* Tony Eng & Tatsuaki Okamoto, *Single-Term Divisible Electronic Coins*, 1994 ADVANCES IN CRYPTOLOGY—EUROCRYPT '94, LECTURE NOTES IN COMPUTER SCI. 311, 313.

21. *See generally* Tatsuaki Okamoto, *An Efficient Divisible Electronic Cash Scheme*, 1995 ADVANCES IN CRYPTOLOGY—CRYPTO '95, LECTURE NOTES IN COMPUTER SCI. 438.

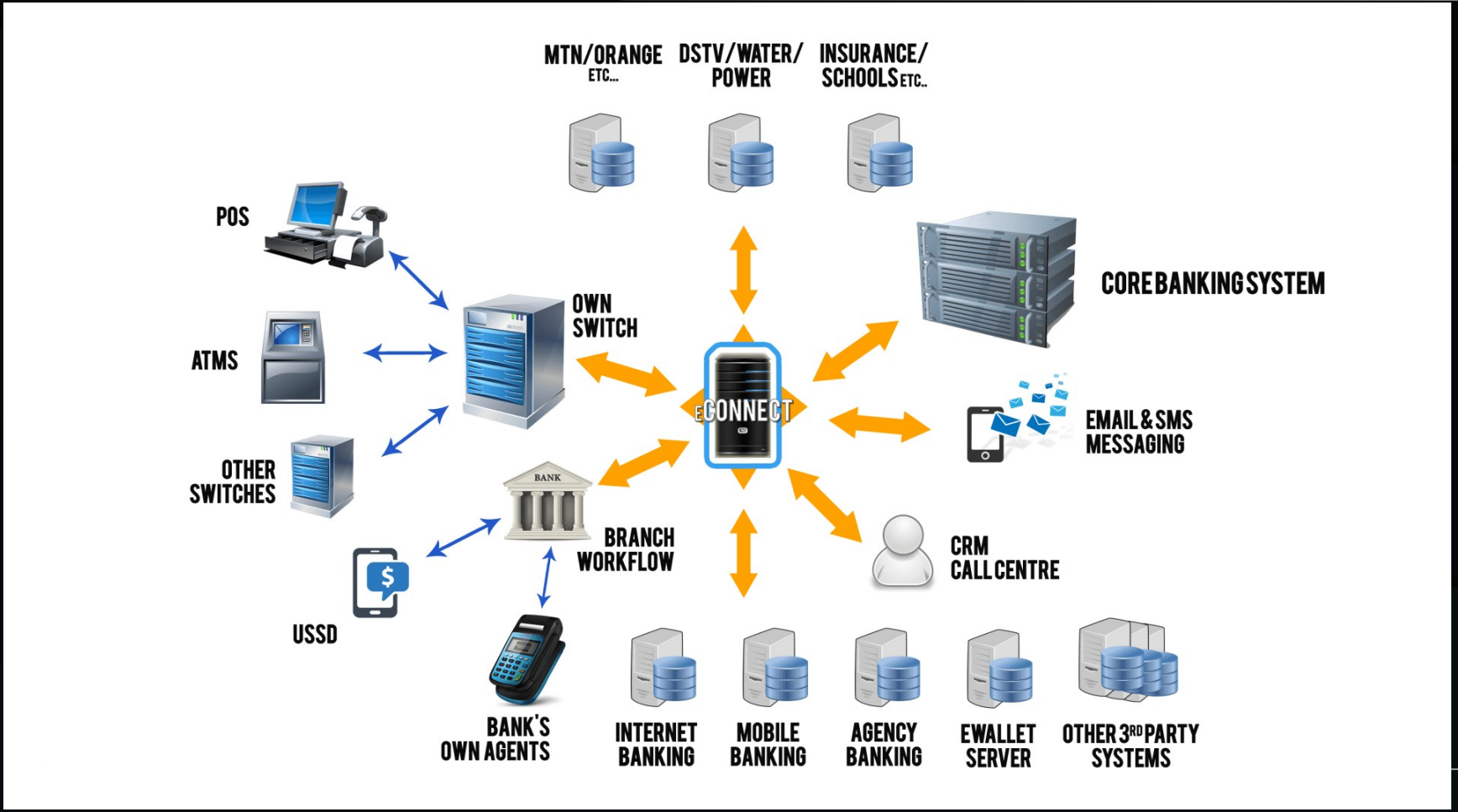
22. *See generally* Tatsuaki Okamoto & Kazuo Ohta, *Universal Electronic Cash*, 1991 ADVANCES IN CRYPTOLOGY—CRYPTO '91, LECTURE NOTES IN COMPUTER SCI. 324.



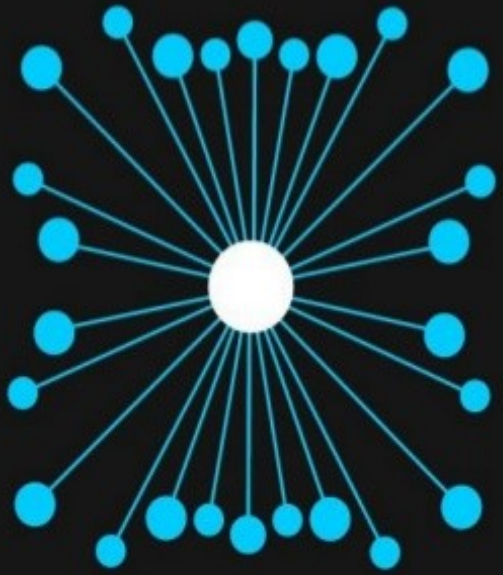
What is Blockchain Technology?

How it Works?

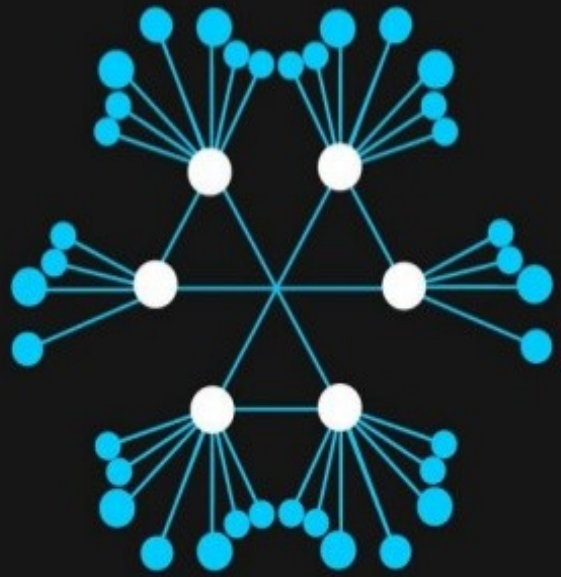
Traditional Banking



Centralized vs Decentralized vs Distributed Network: An Overview



Centralized Network
All the nodes are connected under a single authority



Decentralized Network
No single authority server controls the nodes, they all have individual entity

Distributed Network
Every node is independent and interconnected with each other

What is Blockchain?

- Open, Distributed ledger that can record transactions between two parties efficiently and in a verifiable and permanent way
- is a distributed digital ledger of transactions or a network of blocks; containing documented transactions (data and information) replicated and distributed through the network of computer systems that make up the blockchain.
- Transactions (Irreversible/Pseudonymous/Fast and global/Secure/Permissionless)

- **Bitcoin:** Is an open source censorship-resistance peer-to-peer immutable network trackable digital gold.

Blockchain characteristics and properties

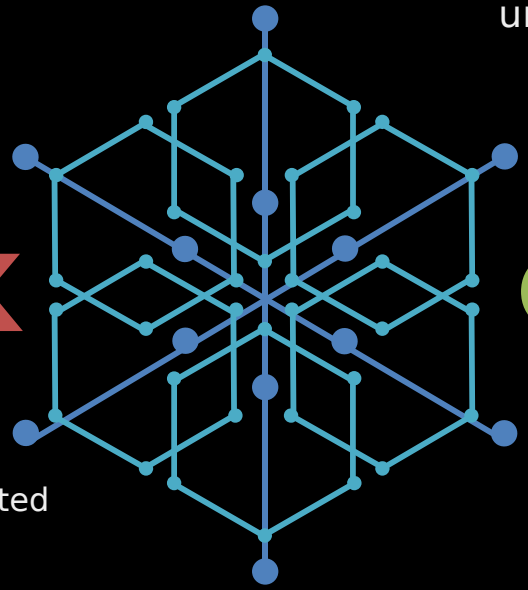
Distributed / decentralized
third party is no longer needed in blockchain.

Anonymous transparency with pseudonymity
The identity of participants is unknown

Programmable / Computational logic
A blockchain is programmable (‘Smart Contracts ’)

Consensus and Peer-to-Peer Transmission
all the nodes must agree on the validity of the records and communicating with other nodes directly

BLOCK



CHAIN

Secure
All the records are encrypted

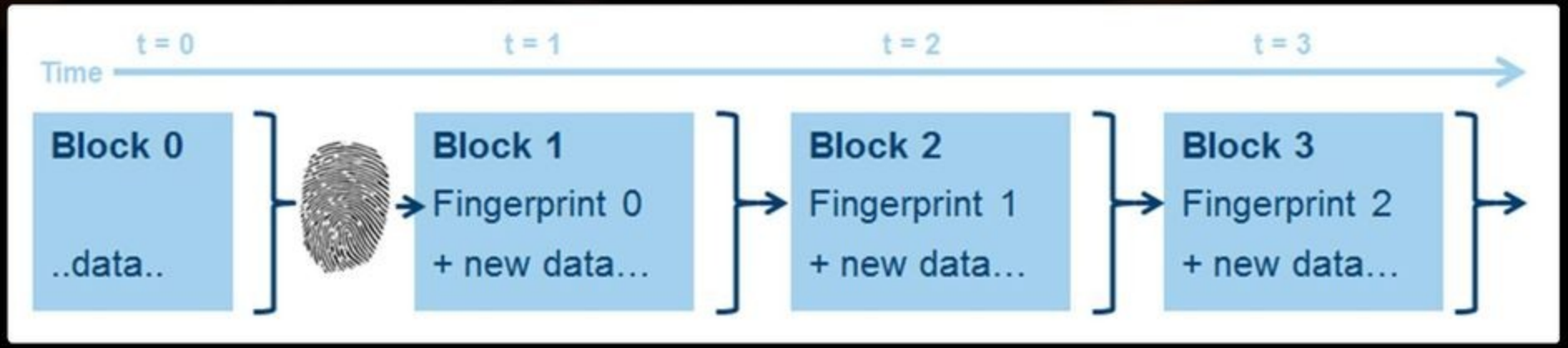
Time-stamped
Transaction timestamp is recorded in a block

Immutable
Any validated records are irreversible and cannot be changed

How Does Blockchain Work ?

- The blocks in the chain are connected to each other in a peer-to-peer (P2P) connection where the first block of the chain is called the Genesis block.
- How Blocks are Connected to Each Other ?
  - Each new block in the chain is linked to the previous block.
  - Each block has a copy of the other blocks' transactions that exist on the same network.
  - The blocks are connected like a chain by the hashes.

Blockchain == Chain of Blocks

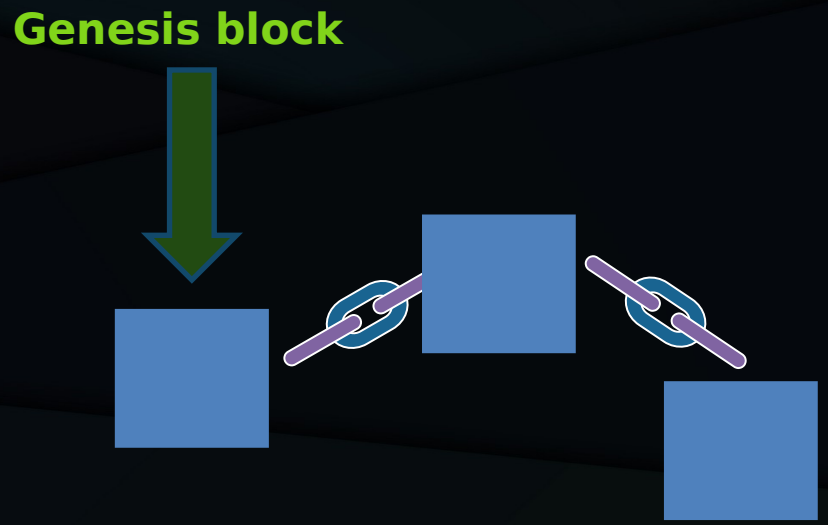


Demo: https://etherscan.io

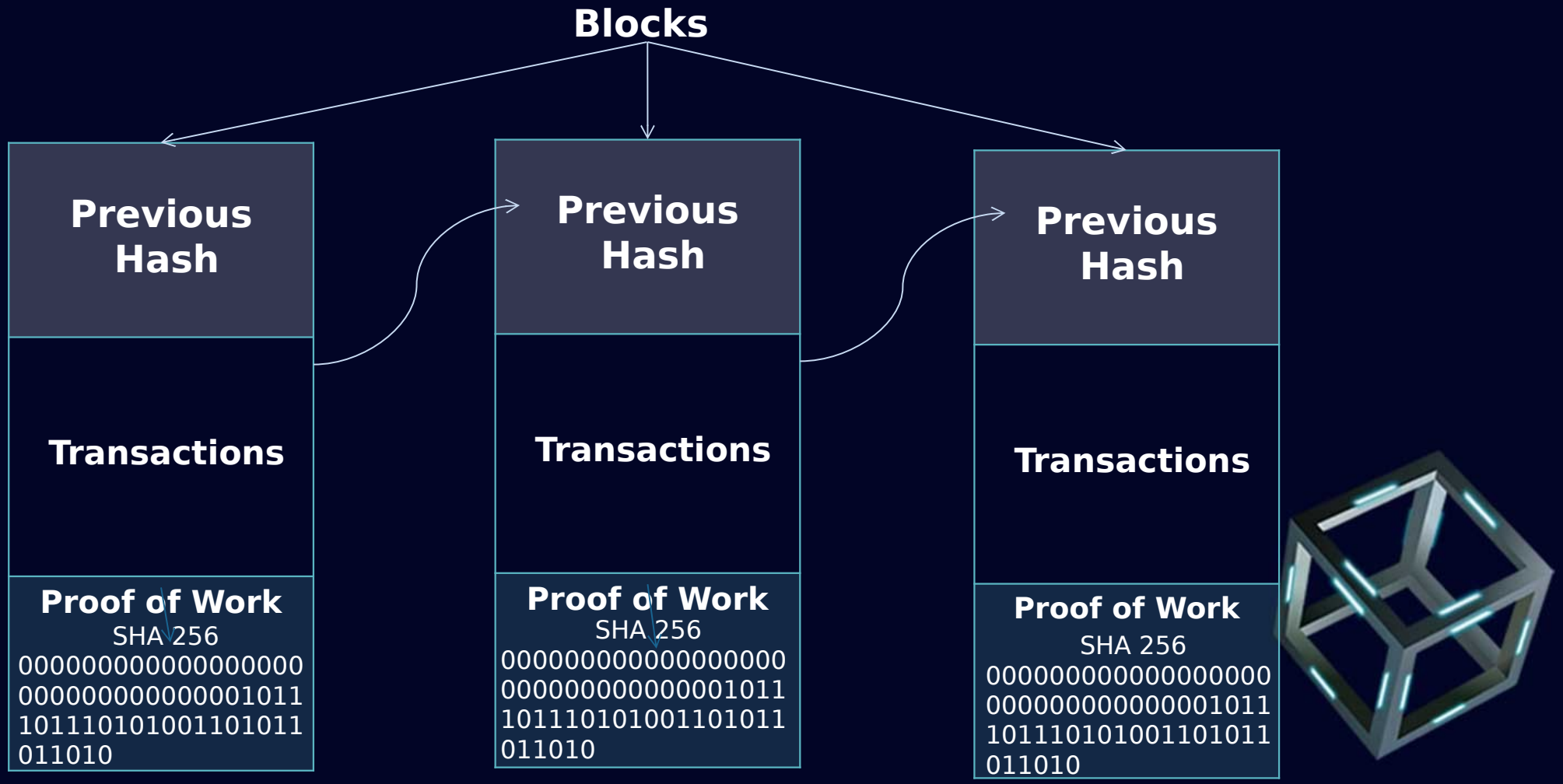
https://blockchain.info

Block’s content

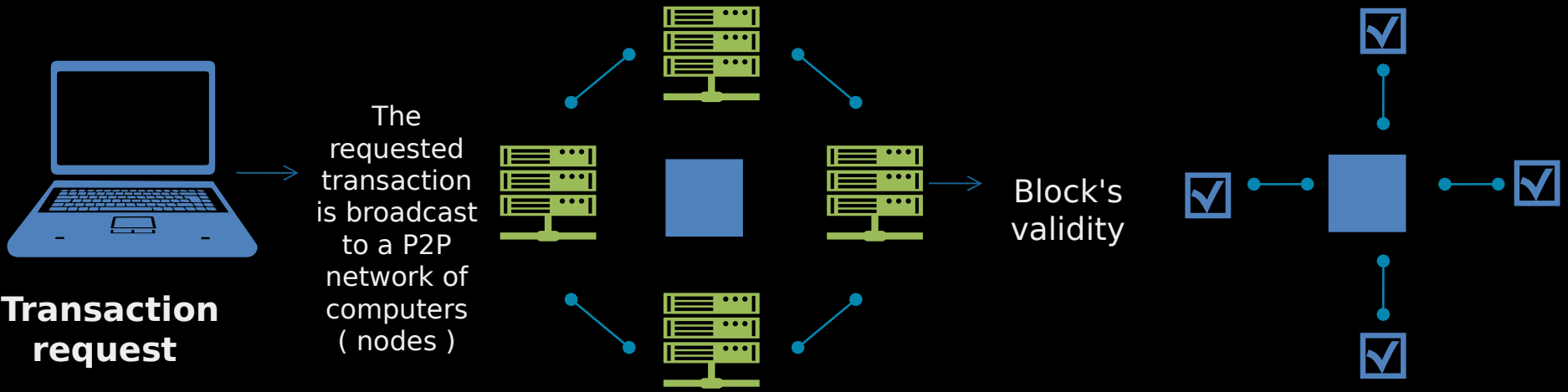
- Data.
- Hash Code.
- Consensus Algorithm.



How Blocks are Connected to Each Other



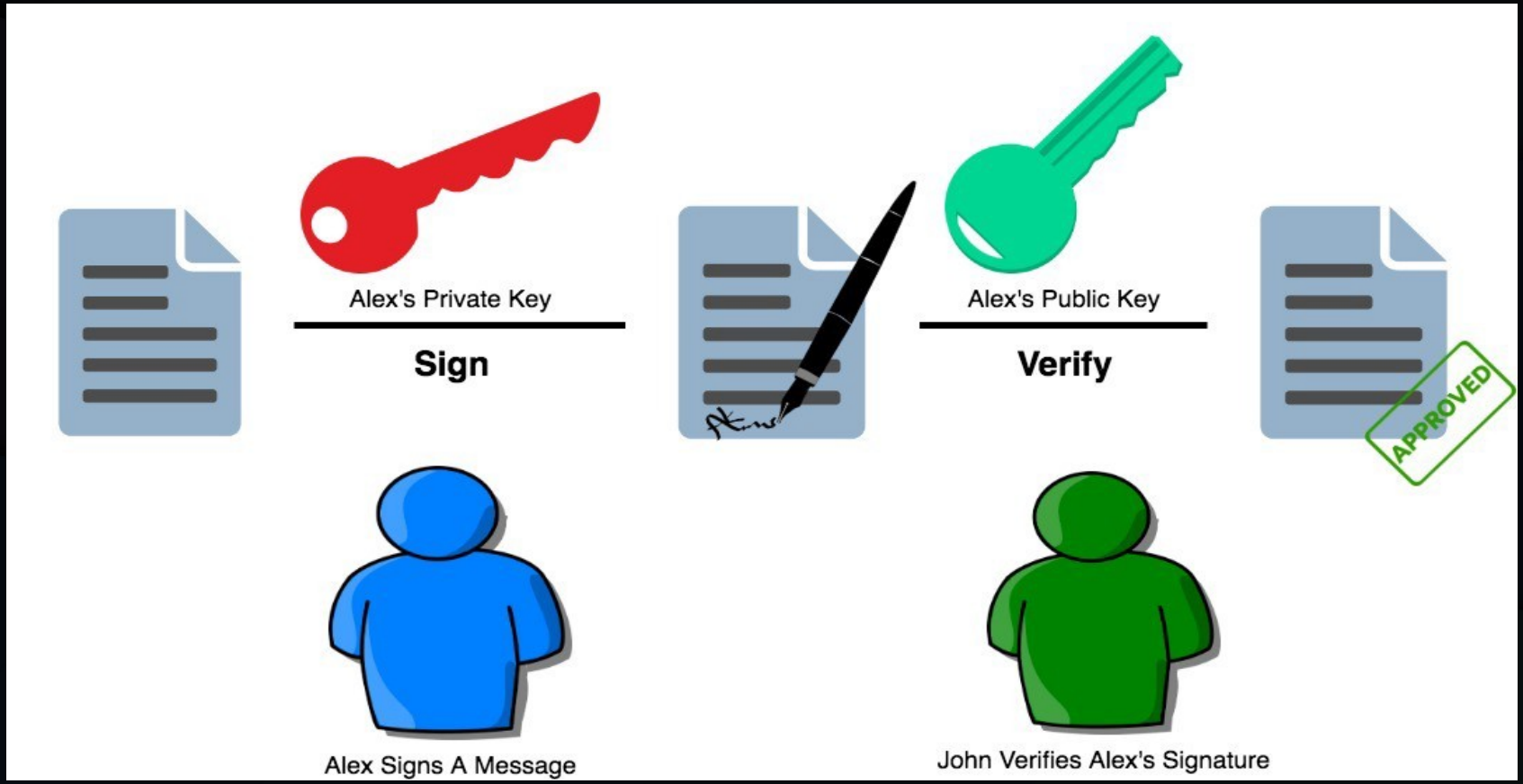
Adding New Block to the Blockchain



CRYPTOGRAPHY

- Converting data into a format that is unreadable for an unauthorized user
- In Blockchains:
  - ✓ **Initiation and Broadcasting of Transaction**
    - ✓ Digital Signatures
    - ✓ Private/Public Keys
  - ✓ **Validation of Transaction**
    - ✓ Proof of Work and certain alternatives
  - ✓ **Chaining Blocks**
    - ✓ Hash Function

Digital Signature



Mining

- Bitcoin miners are nodes in the Bitcoin network that possess specialized software technology called ASICs.
- The Bitcoin miners constantly solve crypto graphically hard puzzles.
- If successful, they get to add a block to the Bitcoin blockchain and get a reward, in return.
- Currently, the bitcoin block reward is around 6.25 BTC.

Mining Farms

Mining pools

SoftUni Foundation

Mining farms:
validate transactions
+ mine coins

Wallets

SoftUni Foundation

Cryptocurrency wallets:

Store securely public and private keys of your blockchain assets

Hold multiple addresses + private keys
May hold BTC, ETH, ERC20 tokens, etc.

Software wallets

Hardware wallets

Online wallets

Characteristics

- “White papers” often address key questions

- Public Blockchains vs Private Blockchains
- Permissioned vs Permissionless
- One ledger or Segregated ledgers
- Sharding (Watch debate: Alex Skidanov, CEO of NEAR Protocol and Anatoly Yakovenko, CEO of Solana)
- Validation Methodology (depends on degree of trust between nodes.)
- Consensus Mechanism (depends on degree of trust between nodes)
- Interfaces/programming language
- Supporting Smart Contracts
- Reward and Staking

Blockchain Platforms

SoftUni Foundation

Bitcoin

The first famous blockchain cryptocurrency

Ethereum

The first famous smart contracts platform

- Litecoin
- Ripple
- Dash
- Monero

https://coinmarketcap.com

Smart Contracts

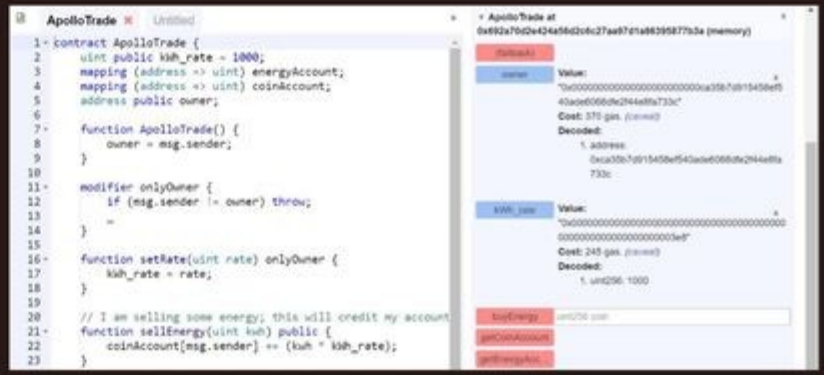
SoftUni Foundation

Smart Contracts

Code (custom logic) running in the blockchain network

Solidity

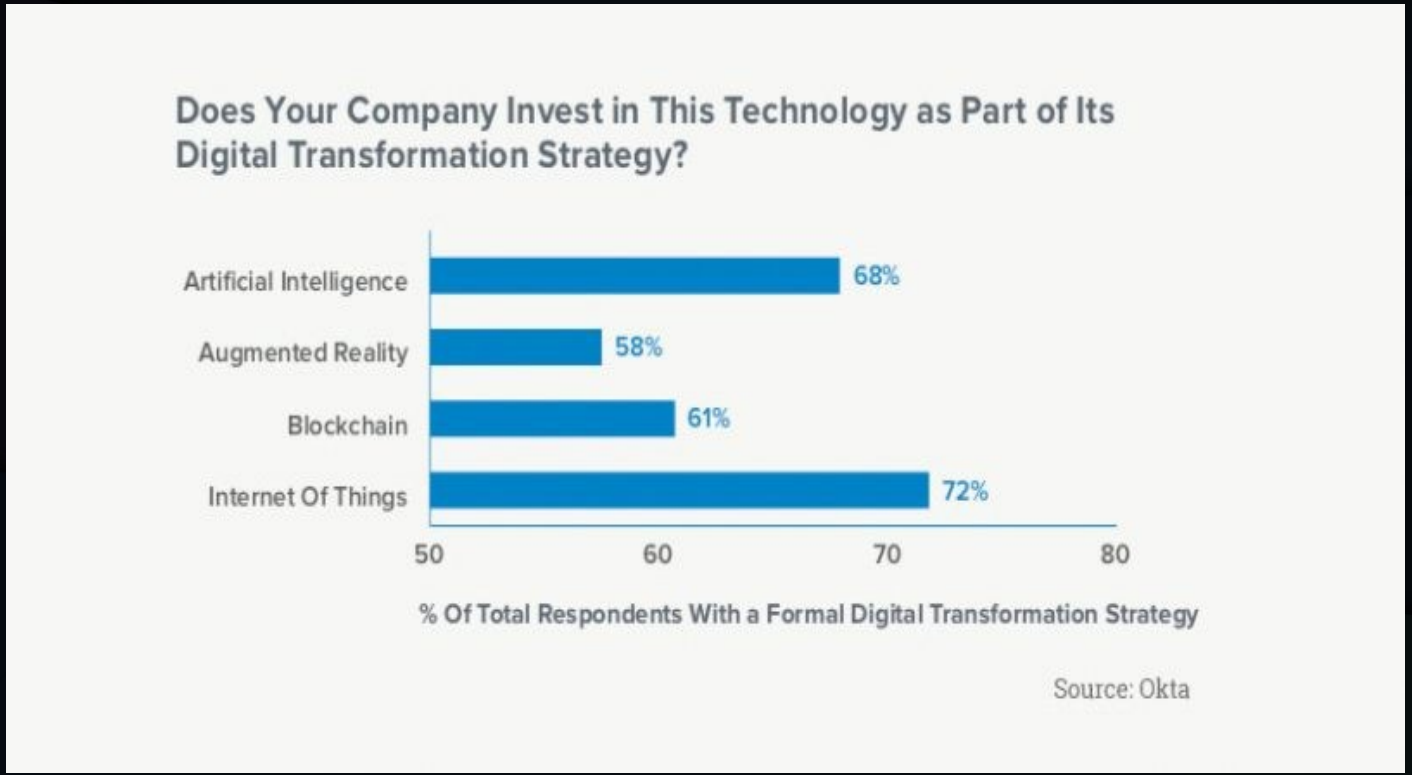
Blockchain programming language for the Ethereum network, running on EVM



smart contract programming

- **Solidity**
  - ➔ Ethereum, Tendermint, Binance Smart Chain, Ethereum Classic, Tron, Avalanche, CounterParty, and Hedera.
- **Rust**
  - ➔ Solana, Polkadot, Near
- **Javascript**
  - ➔ Hyperledger Fabric
- **Vyper**
  - ➔ Similar to Python
- **Yul**
  - ➔ Most Ethereum-based projects most likely already use Yul
- **Move**
  - ➔ Aptos

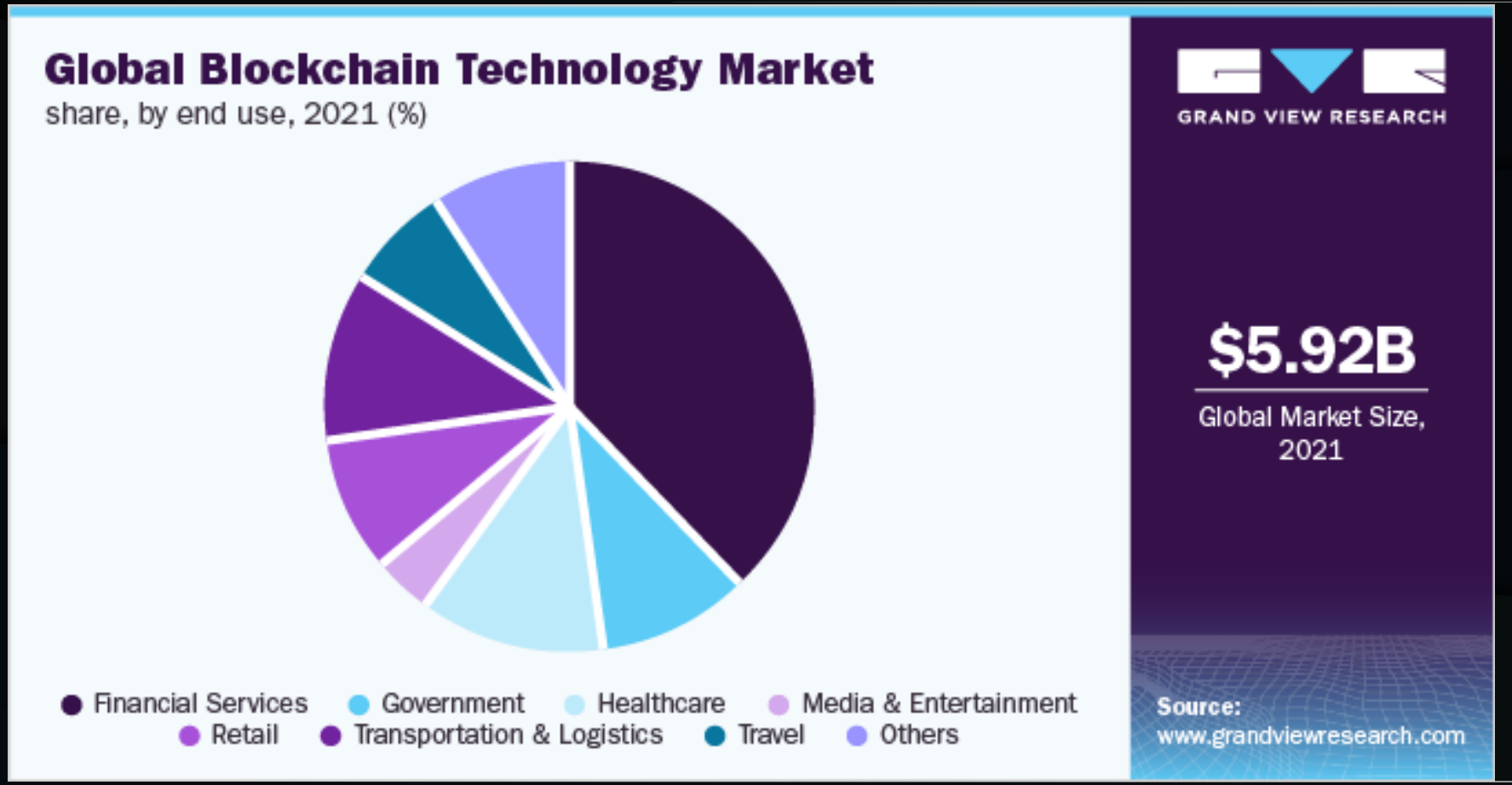
Digital Transformation



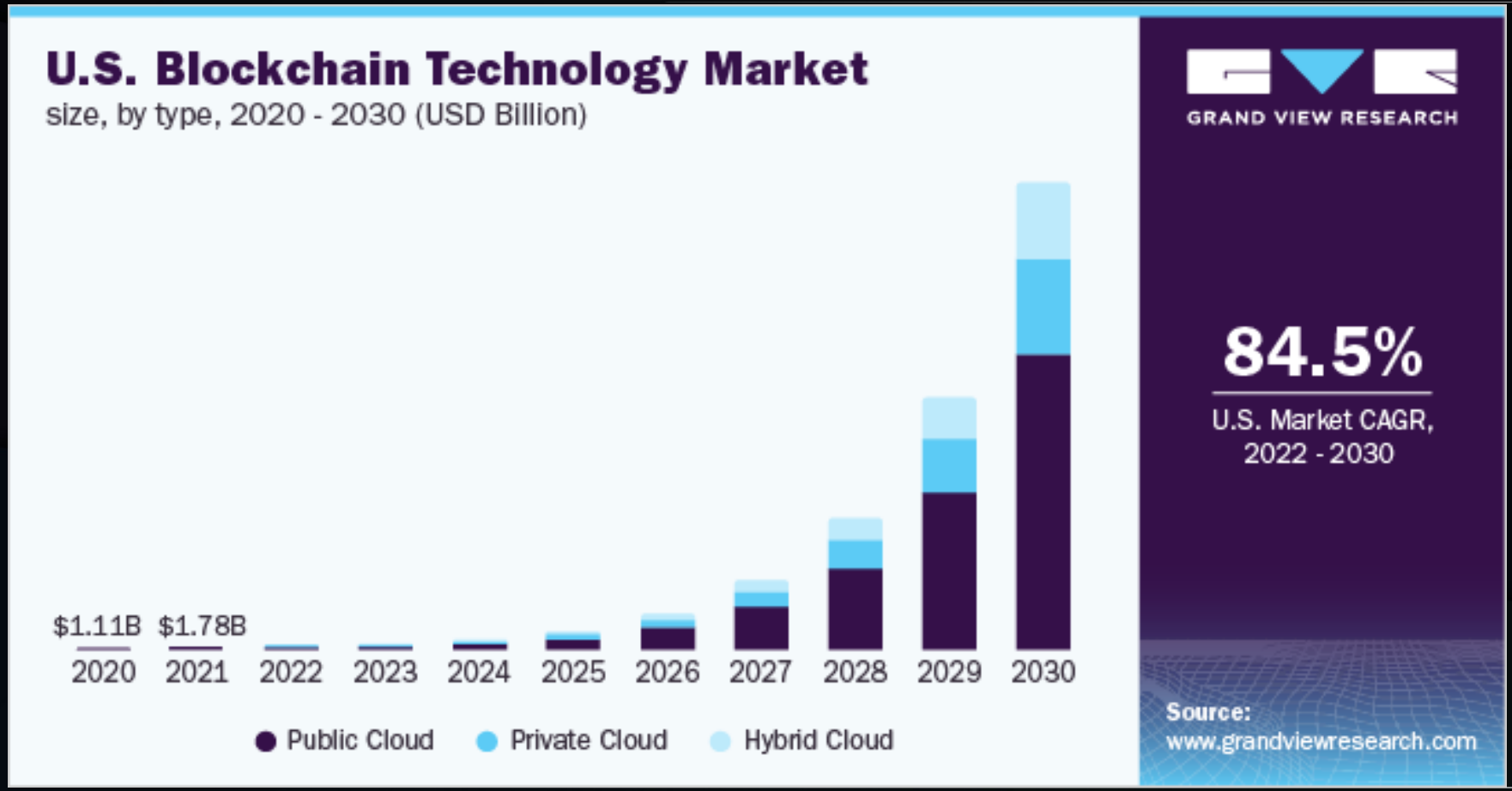
Digital Transformation & Blockchain

- Blockchain is part of digital transformation strategy for over 61% of enterprises
- Over 60% of the global 2000 will use blockchain services as a foundation for digital trust at scale
- Nearly 6 in 10 large corporations are either actively considering, or are in the process of, deploying blockchain technology
- Blockchain have many potential applications rather than financial services industry
- Zero Trust

Digital Transformation



Digital Transformation



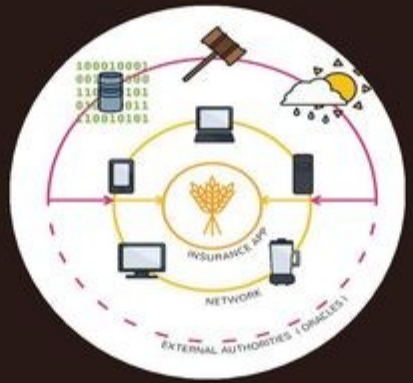
Blockchain Applications

SoftUni Foundation

Cryptocurrencies

Digital money with no central bank

Decentralized applications



Removing the middlemen

Digital investments

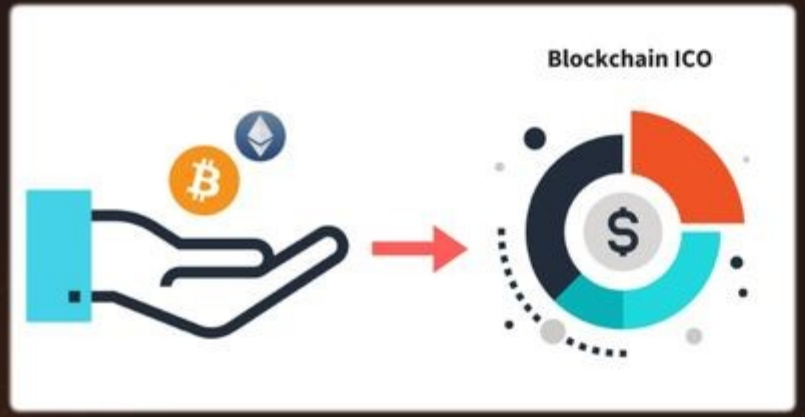
Fund raising / ICO / token sales

ICO / Token Sale Events

SoftUni Foundation

ICO (Initial Coin Offering)

Funds raised for a new cryptocurrency venture



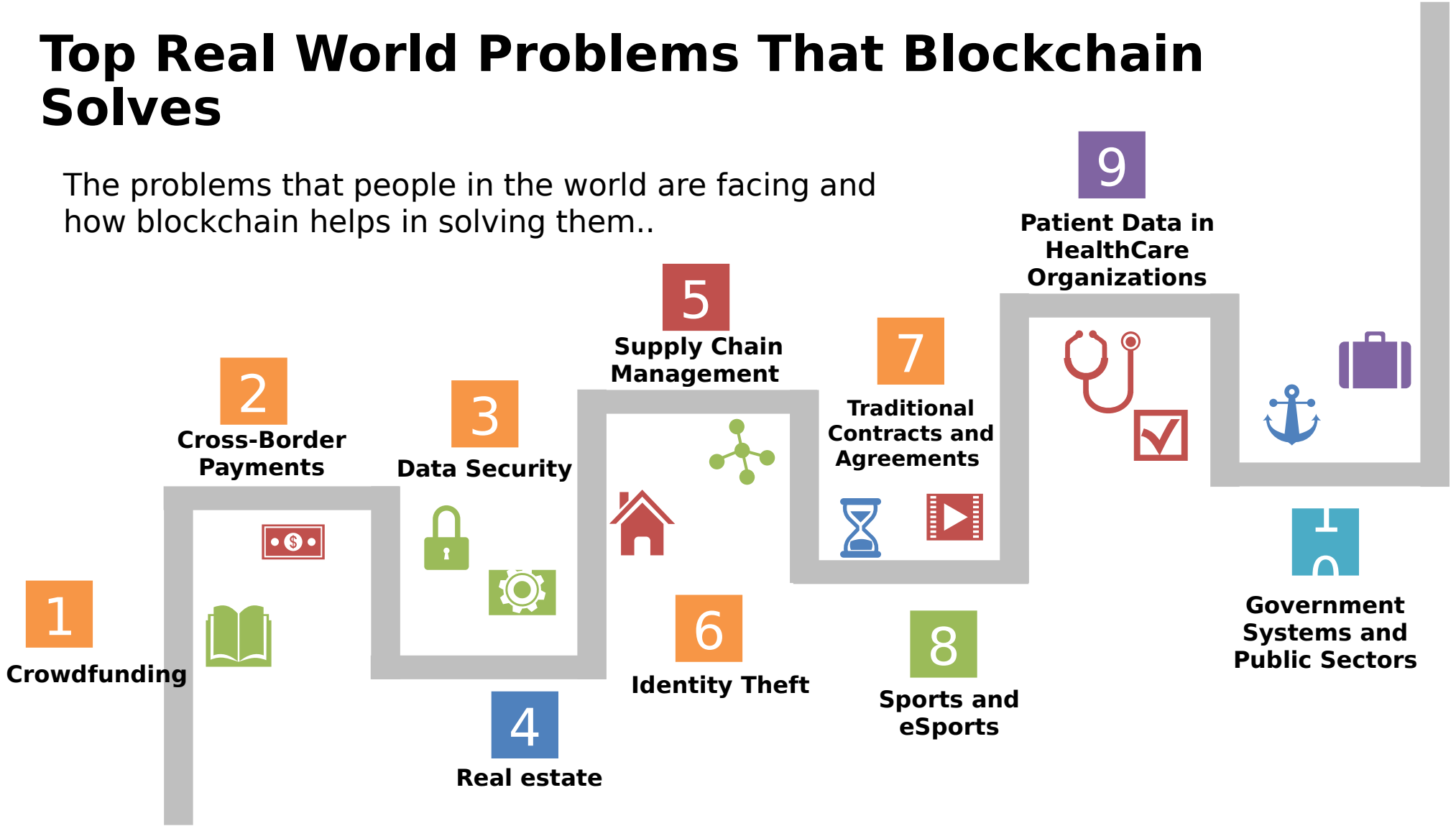
Token Sale Events

Digital tokens raised through a smart contract

Example: LockChain

Top Real World Problems That Blockchain Solves

The problems that people in the world are facing and how blockchain helps in solving them..



High Demand Markets

- Supply Chains
- Education
- Healthcare
- Insurance
- IOT
- Investing
- Digital Assets & Bonds
- Digital Banking & Payments
- Game Industry
- Data Management

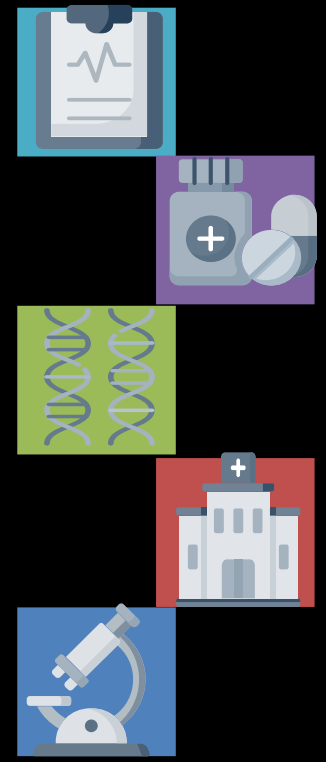
Managing and Protecting Patient Data in HealthCare Organizations

Patient Data in HealthCare

- Patient data include information relating to their past and current health or illness, their treatment history, lifestyle choices and genetic data
- **Key Problem:** The lack of secure links that can connect all independent health systems together to establish reachable network by all Healthcare institutions.
- **Between 2009 and 2017**: 176 million health records were compromised.

Patient Data in HealthCare Organizations after blockchain

- ✓ Accessibility and transparency to all Healthcare institutions.
- ✓ Security and reliability of patient data.
- ✓ Also secrecy.



Blockchain companies for healthcare data management

	Name	Location	Website
Blockchain and Healthcare Data Security	BURSTIQ	Denver, Colorado	https://www.burstiq.com/
	MEDICALCHAIN	London, England	https://medicalchain.com/en/
	GUARDTIME	Lausanne, Switzerland	https://guardtime.com/
Blockchain Medical Records	AVANEER HEALTH	Chicago, Illinois	https://avaneerhealth.com/
	PROCREDEX	Tampa, Florida	https://procredex.com/
	CORAL HEALTH	New York, New York	https://www.coralhealth.com/
	PATIENTORY	Atlanta, Georgia	https://patientory.com/
Blockchain and Medical Supply Chain Management	CHRONICLED	San Francisco, California	https://chronicled.com/
	EMBLEEMA	New York, New York	https://www.embleema.com/
	BLOCKPHARMA	Paris, France	https://www.blockpharma.com/
	TIERION	San Francisco, California	https://tierion.com/
	SOLULAB	Los Angeles, California	https://www.solulab.com/
	FARMATRUST	London, England	https://www.farmatrust.com/
Breakthroughs in Genomics	SHARECARE	Atlanta, Georgia	https://www.sharecare.com/
	NEBULA GENOMICS	San Francisco, California	https://nebula.org/whole-genome-sequencing-dna-test/
	ENCRYPGEN	New York, New York	https://encrypgen.com/

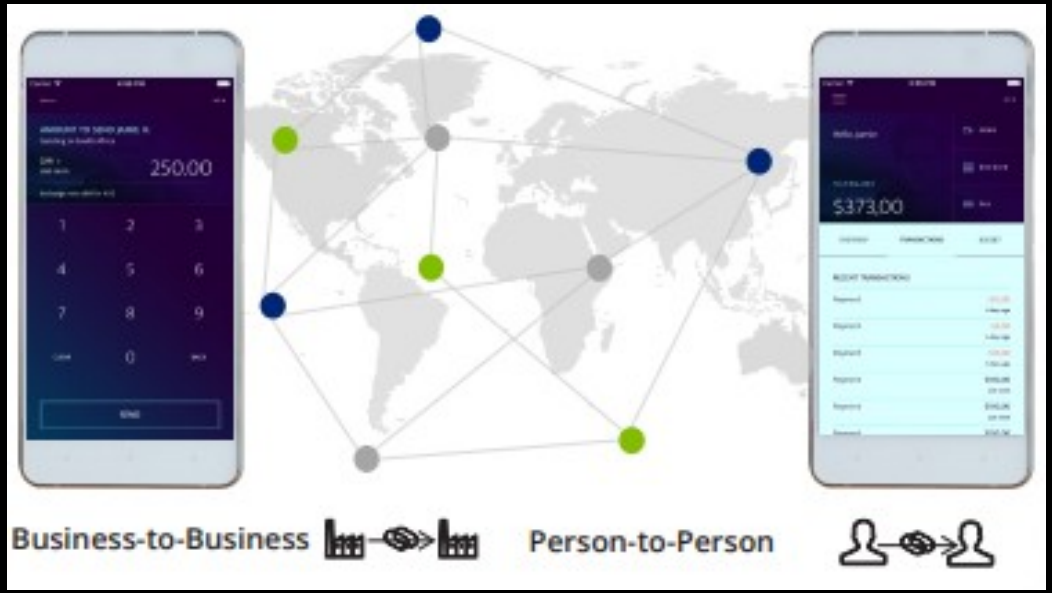
Cross-border payments

Cross Border Payments

- Cross-border payments: are transactions where the payee and the transaction recipient are both located in different countries
- **Traditional Cross Border Payments:**
  - Many steps to do
  - Needs a lot of time and effort
  - High cost
  - Requires third parties

Cross-border Payments after Blockchain

Enabling Business-to-Business and Person-to-Person payments across borders on vendor blockchain-based payment rails.



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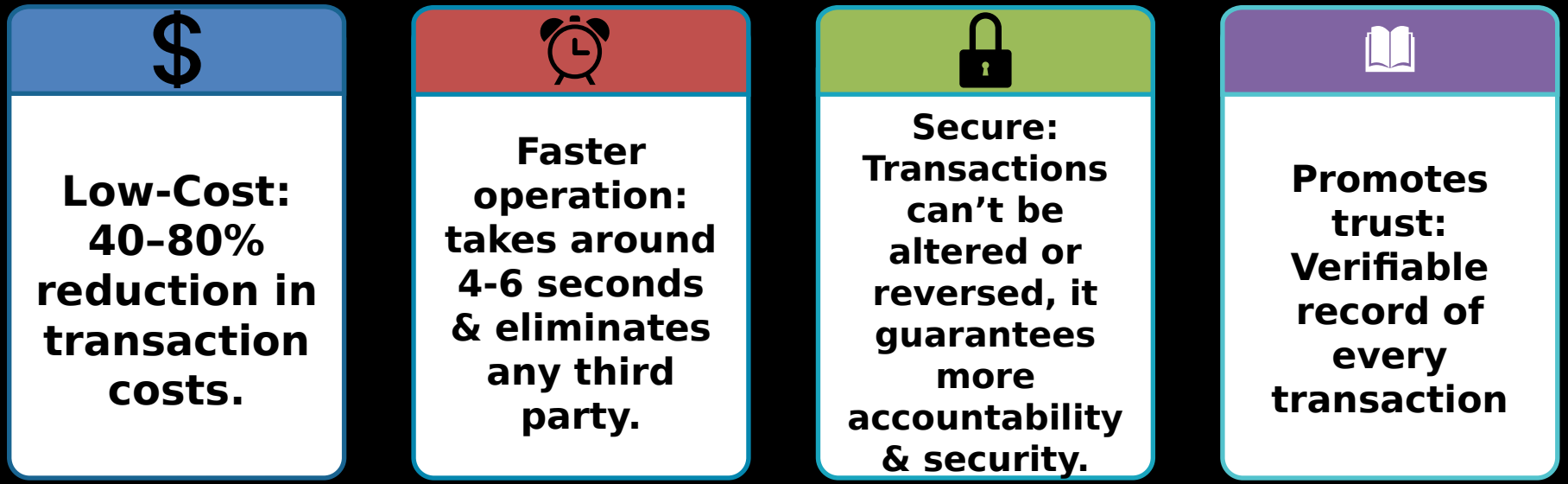
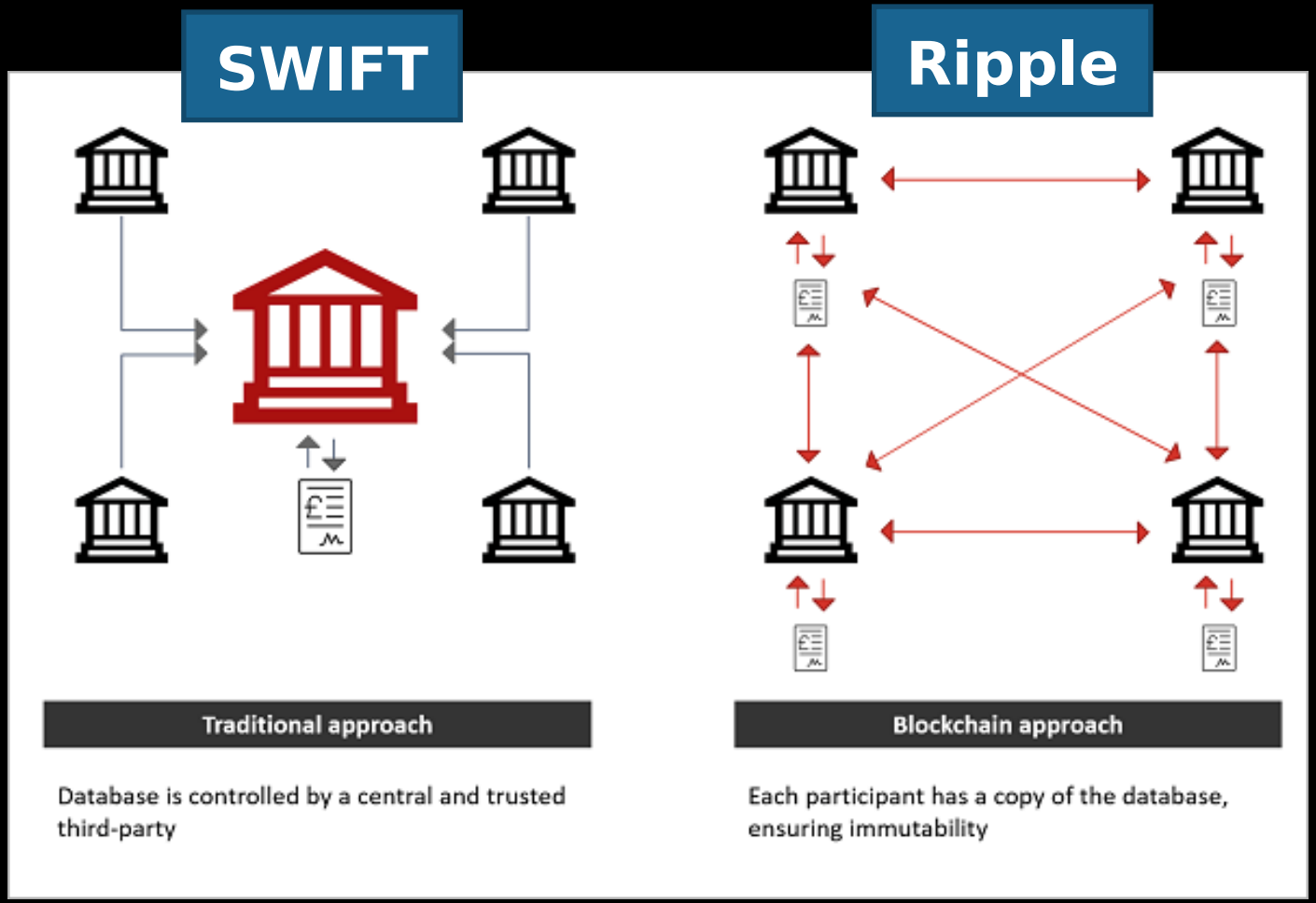
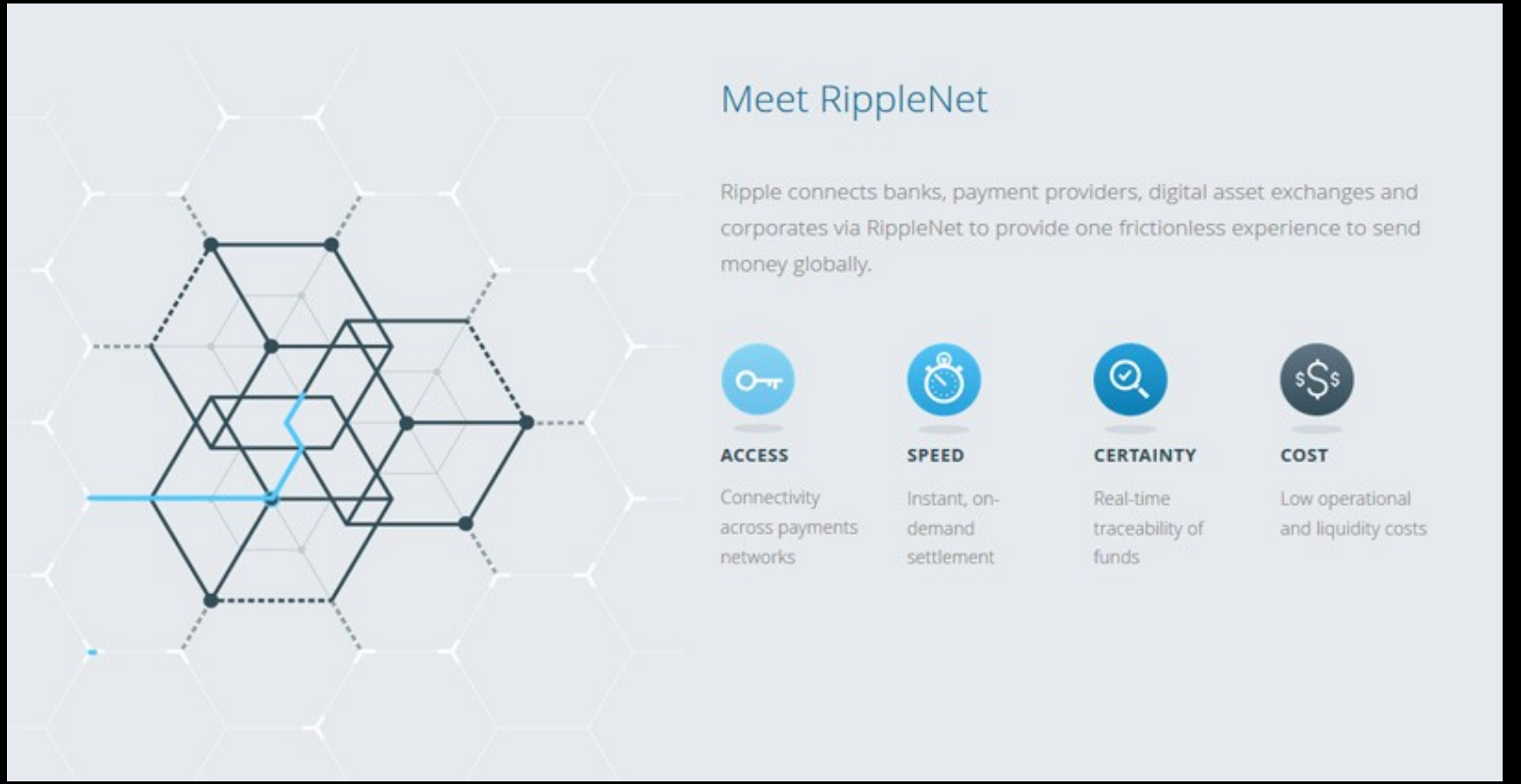


Traditional VS Blockchain Cross-border payments



Ripple Net


Meet RippleNet
Ripple connects banks, payment providers, digital asset exchanges and corporates via RippleNet to provide one frictionless experience to send money globally.
ACCESS
Connectivity across payments networks
SPEED
Instant, on-demand settlement
CERTAINTY
Real-time traceability of funds
COST
Low operational and liquidity costs

The Largest Bitcoin Transaction

- https://www.blockchain.com/explorer/transactions/btc/b36bced99cc459506ad2b3af6990920b12f6dc84f9c7ed0dd2c3703f94a4b692
- $1.1 billion (161,500 BTC)
- April 10, 2020
- Fee: 0.00010019 BTC ($3.74)


DATA
SECURITY

Data Security

- the science and study of methods of data protection for preventing unauthorized access of data in computer and communication systems

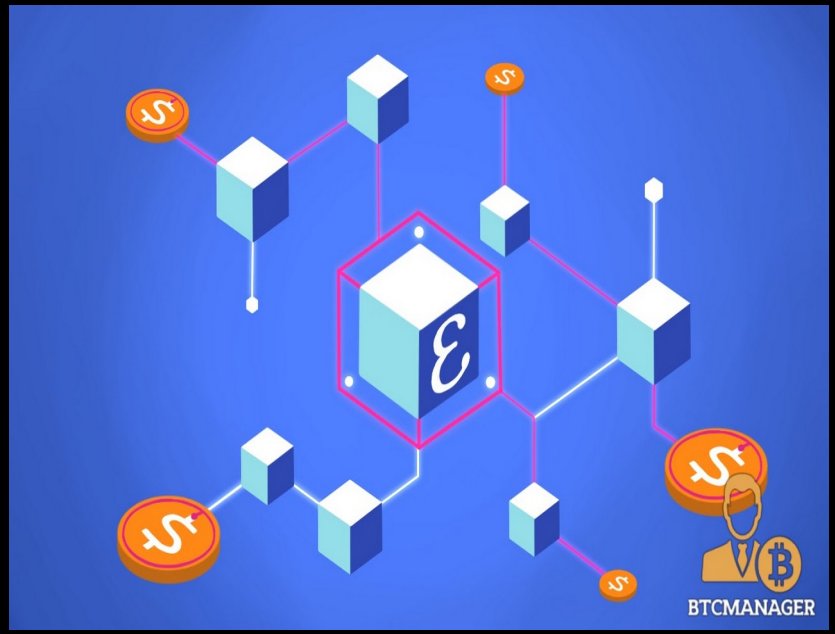
- Before Blockchain:
  - Centralized storage
  - Vulnerable to security breaches
  - Construct multiple barriers by requiring
  - several factors of authentication to
  - accessing data.
  - Several factors may cause centralized
  - databases to fail.
  - Need of a third party

Data Security after blockchain

- Increase security
- Increase speed of cloud storage.
- The data cannot be tampered with or stolen.
- There is no need for a central entity or place to store data.
- There is no need for a third party.

Enigma

- http://livinglab.mit.edu/wp-content/uploads/2016/01/enigma_full.pdf
- A decentralized computation platform with guaranteed privacy, and an evolution upon the blockchain technology.
- goal is to enable developers to build a ‘privacy by design’, end-to-end decentralized application without a trusted third party



Real Estate

Real Estate

- **Real Estate** are the assets owned by a company, group of people or an ordinary person, such as buildings, and lands which are physical, tangible, real and can be owned.

- Before Blockchain:
  - Needs face to face engagement.
  - Needs prove the legal property.
  - Papers need to be signed by the government organizations.
  - Real estate fraud.
  - Real estate sector is vulnerable.

Real Estate Sector Development after Blockchain

- it enables the owners to digitize their assets and store them inside the blockchain cryptography.

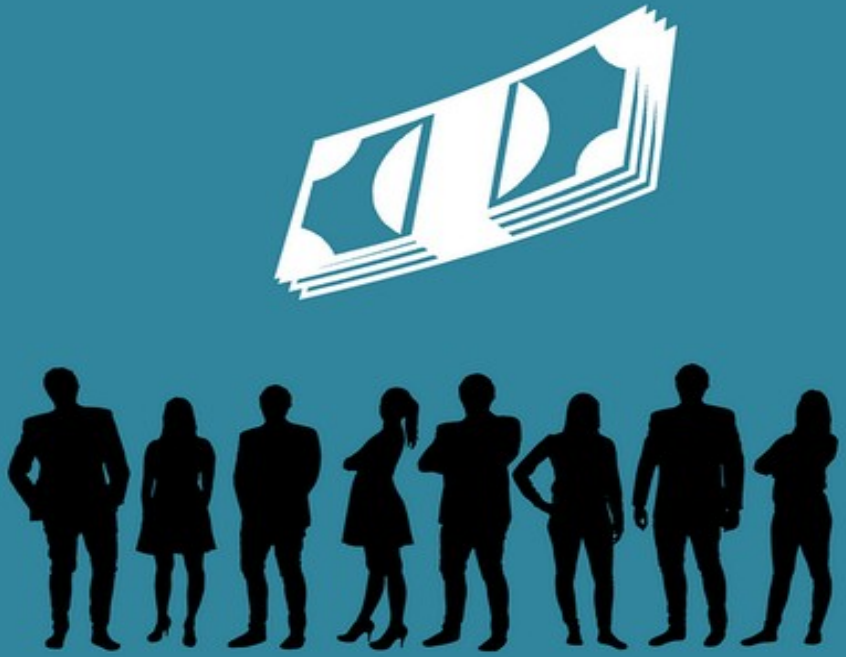
- offers the speed and security.
- there is no third party control and validates the transaction.
- offers the transparency.
- Automation of the entire home-buying/selling process.

Propy Company

one of the first businesses to use smart contracts in the purchase and sale of real estate. A $60,000 apartment in Ukraine was the first transaction made using their system.


SUPPORT
GOAL
PROJECT
CROWDFUNDING
IDEA
DONATE
IDEA
STARTUP

Crowdfunding



Collecting small amounts of donations from a large group of people to support a new business idea.

Traditional Crowdfunding

Security risks

Illegal Transactions

Fraud and abuse

An example of a crowdfunding scam

Asenergy Case
(2015)

- By leveraging crowdfunding platforms such as Fundable and EquityNet.
- Raised 5 million dollars from about 90 investors.
- The money was supposed to be spent on oil and gas operations.
- The founder used most of the funds for overseas trips, dining, dietary supplements and personal care products.
- Before the SEC took action, 1.2 million dollars had been siphoned off.

Crowdfunding after blockchain

With blockchain transactions are

- ✓ Reliable
- ✓ Transparent
- ✓ Trusted
- ✓ Cost-efficient

Highest-funded crowdfunding projects

https://en.wikipedia.org/wiki/List_of_highest-funded_crowdfunding_projects

Ruja Ignatova

- FBI's Most Wanted Scammer
- 42-year-old woman, german citizen dubbed the 'Cryptoqueen'
- European law at Oxford University
- Behind $4 Billion Fraud
- 2014: defrauded billions of dollars from investors all over the world through her new company OneCoin (Bitcoin Killer)
- October 2017: boarded a plane in Sofia, Bulgaria, and vanished with the stolen money.

Screen grab from video posted on Facebook by fbi.gov


SCM
Supply Chain Management
CUSTOMER
WAREHOUSE
DISTRIBUTION
TIME TO MARKET
TRACKING
LOGISTICS
MANAGEMENT
MANUFACTURER
PROCUREMENT
PLAN
ANALYSIS
DELIVERY
PROFIT

Supply Chain

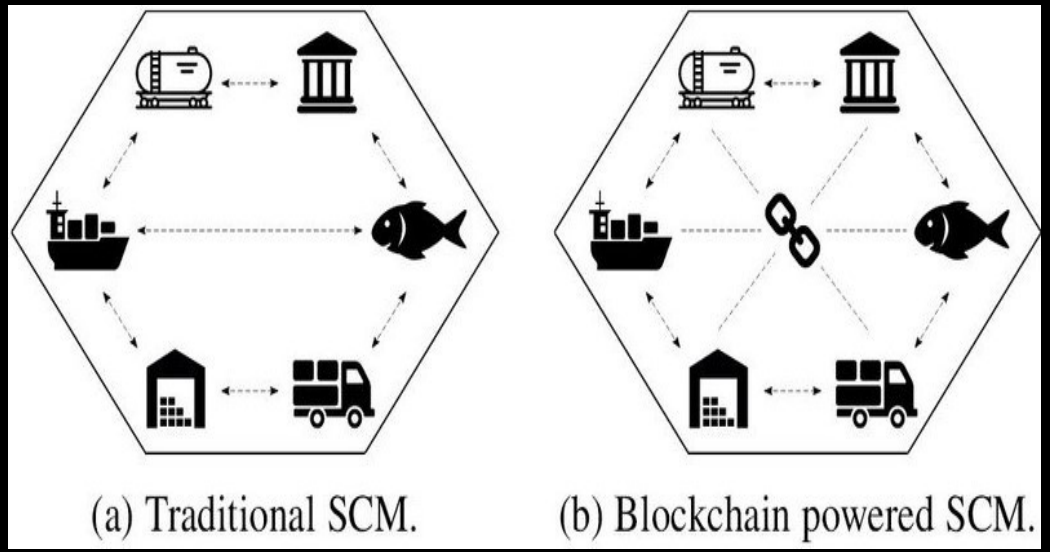
- Materials, information, and payments flow through the supply chain in both directions.

- Before Blockchain:
  - Lack of transparency
  - Information disclosure
  - Data tampering
  - Single node attack
  - Security threats

SCM after blockchain

supply chain companies can document production updates to a single shared ledger, which provides complete data visibility and a single source of truth. Because transactions are always time-stamped and up to date, companies can query a product's status and location at any point in time.

- ✓ Secure traceability and control
- ✓ Data immutability
- ✓ Interoperability
- ✓ Transparency



Walmart

Benefits after integrating with IBM for food safety in the supply chain:

- Reduction in fraud
- Improved supply chain efficiency
- Increased trust of the consumer
- Lower inventory and courier costs


IDENTITY
THEFT

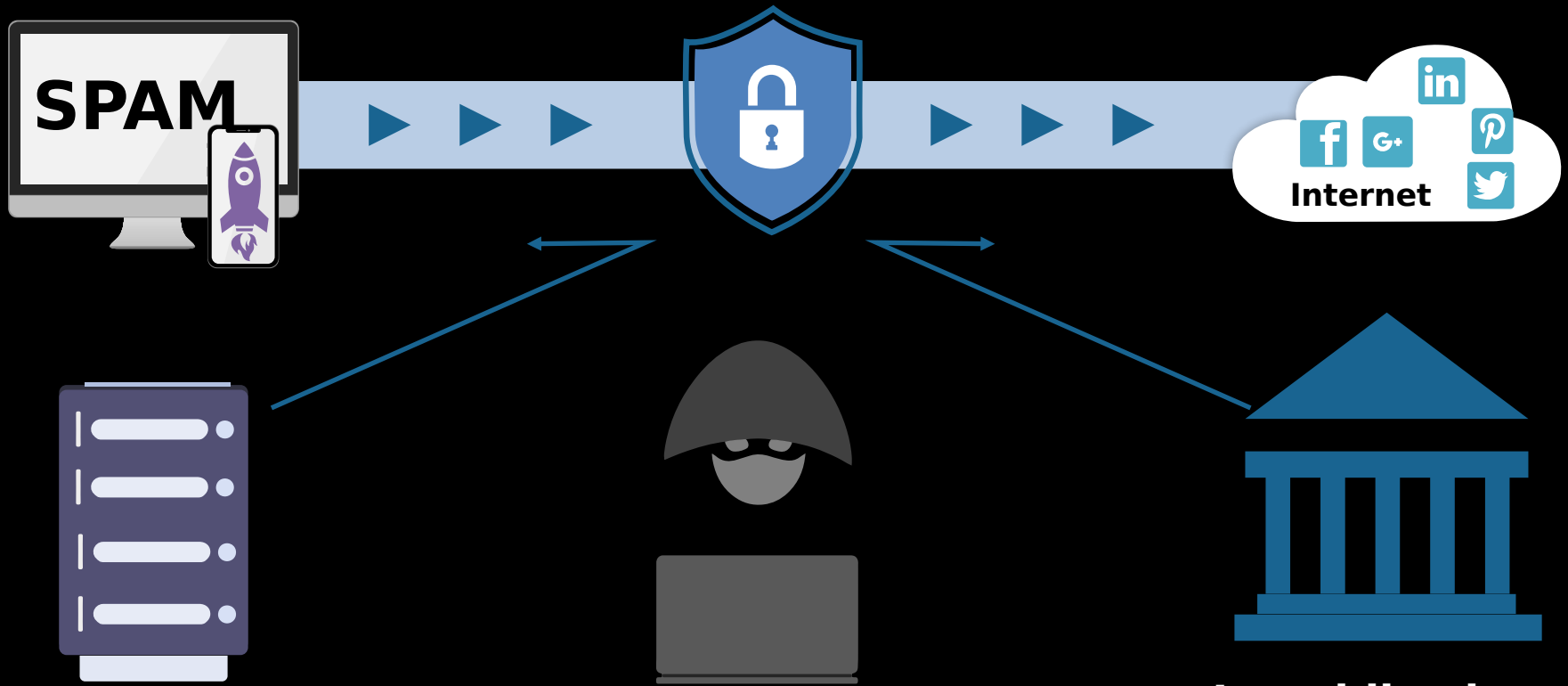
Identity Theft

Identity is a bunch of data entered telling who you are as a person such as:

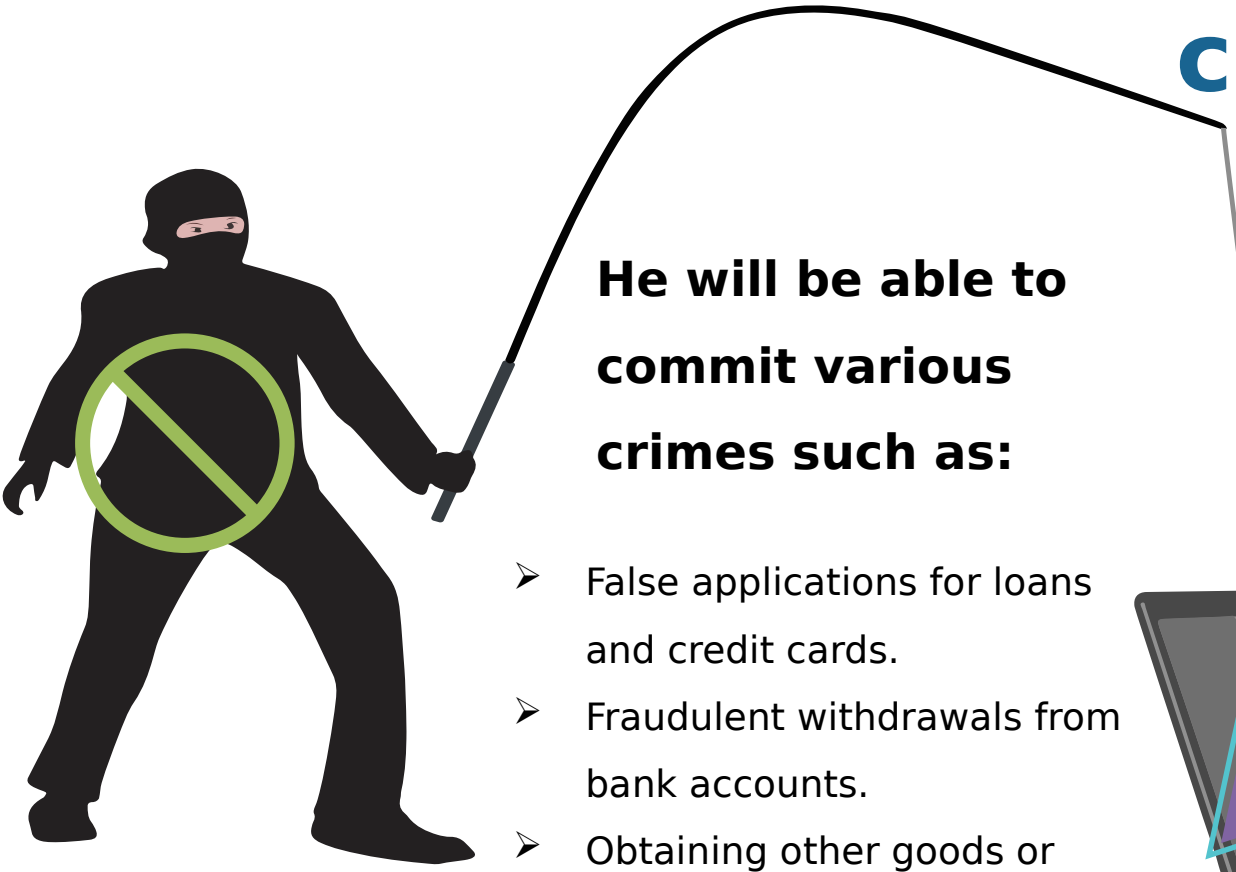
- Address
- ID number
- Passport number
- Driver's license number ...etc.

It’s all types of crime in which someone steals another person's personal or financial data in order to use them in fraud or deception.

How Identity theft can happen to a person?



What a criminal could do with it?



He will be able to commit various crimes such as:

- False applications for loans and credit cards.
- Fraudulent withdrawals from bank accounts.
- Obtaining other goods or privileges.

Issues with identity theft

Simple information can lead to identity theft. Victims don’t recognize they are victims until they see the negative consequences.

An online survey by The Harries Showed that nearly 60 million people have been affected by identity theft in 2018, which is only in the USA.

Identity Theft after Blockchain

- Extremely difficult on hackers to manipulate data.
- Hackers needs to get access each device on the network.
- Records can only be deleted after consensus.
- Any modification will be reflected in the systems, which in its role will warn all participants.

Example

NewBanking IDENTITY

Product Industry Knowledge About Support

Log in Book a demo

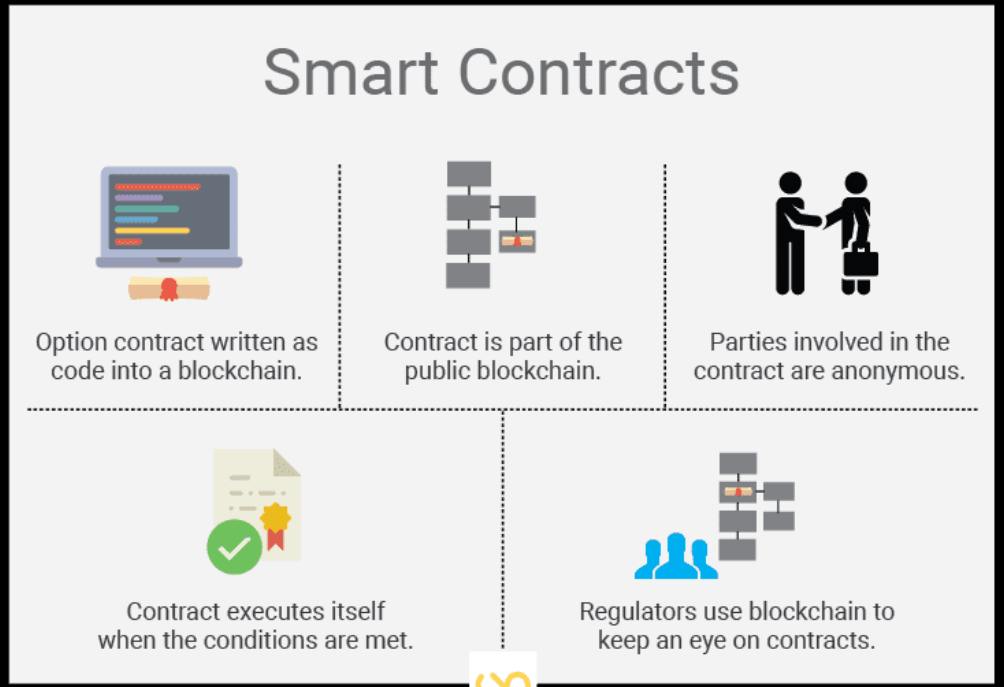
Security

Your sensitive data is safe with us. The NewBanking Platform has been built from the ground up to secure your data.


Smart
Contract

Smart Contracts

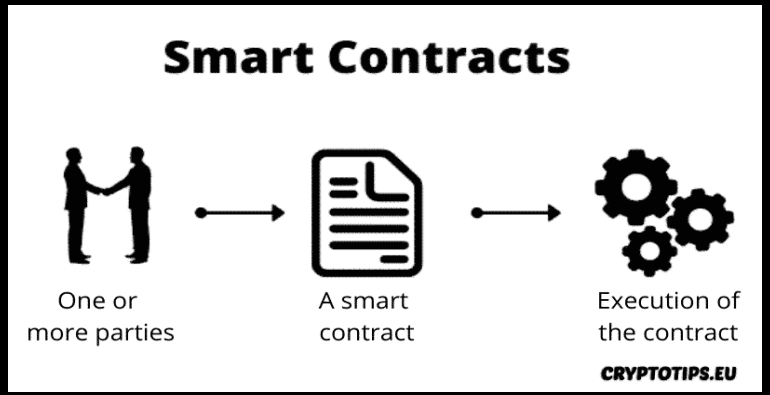
- ✓ A smart contract is executable code that runs on the blockchain to facilitate, execute and enforce the terms of an agreement.
- ✓ Traditional Contracts and Agreements:
  - Multi-step process.
  - Waste of time.
  - Waste of money.
  - Third-party involvement is needed.

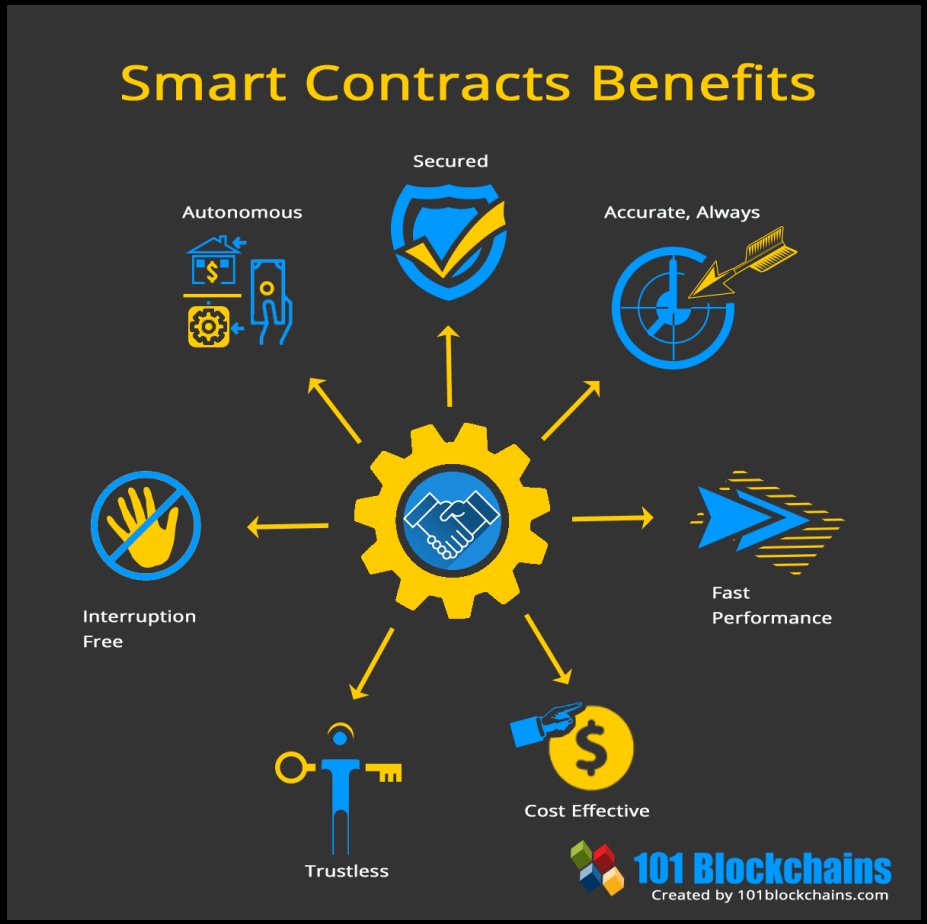


Contracts after Blockchain

When using blockchain technology, the problem of traditional contracts can be avoided.

Example: Smart contracts are used to encode rules to govern an organization






Sports and
eSports

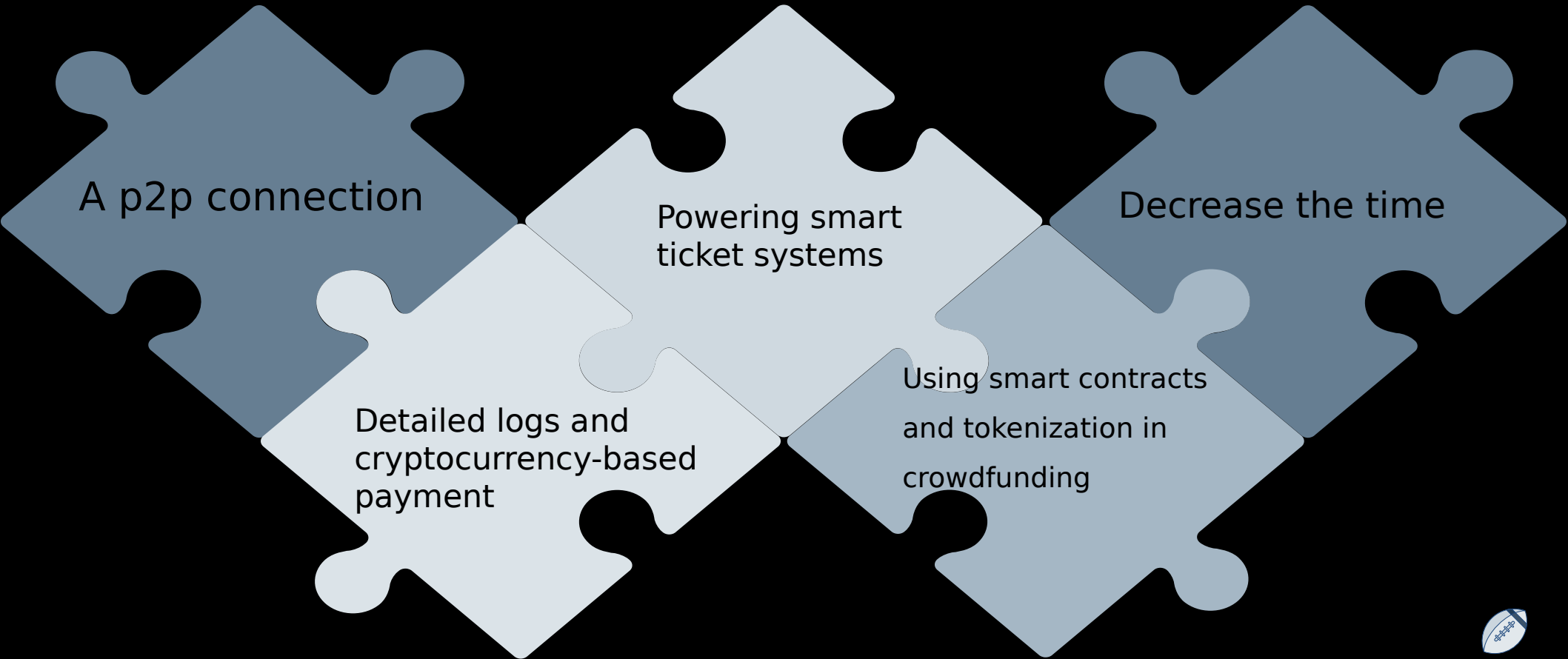
Sports and eSports

- ✓ Sports and Esports : are part of the entertainment sector where each has its fans who are interested in catching up their news.
- ✓ Sports and Esports:
  - ✓ Sports means the traditional championships
  - ✓ established in the real world such as football,
  - ✓ basketball and so on.
  - ✓ The eSport (Electronic Sports) means real time
  - ✓ competition, video games facilitated by
  - ✓ electronic devices (computers, smart phones,
  - ✓ PS4, and Xbox... etc.) used by cyberathletes to
  - ✓ play various numbers of games.

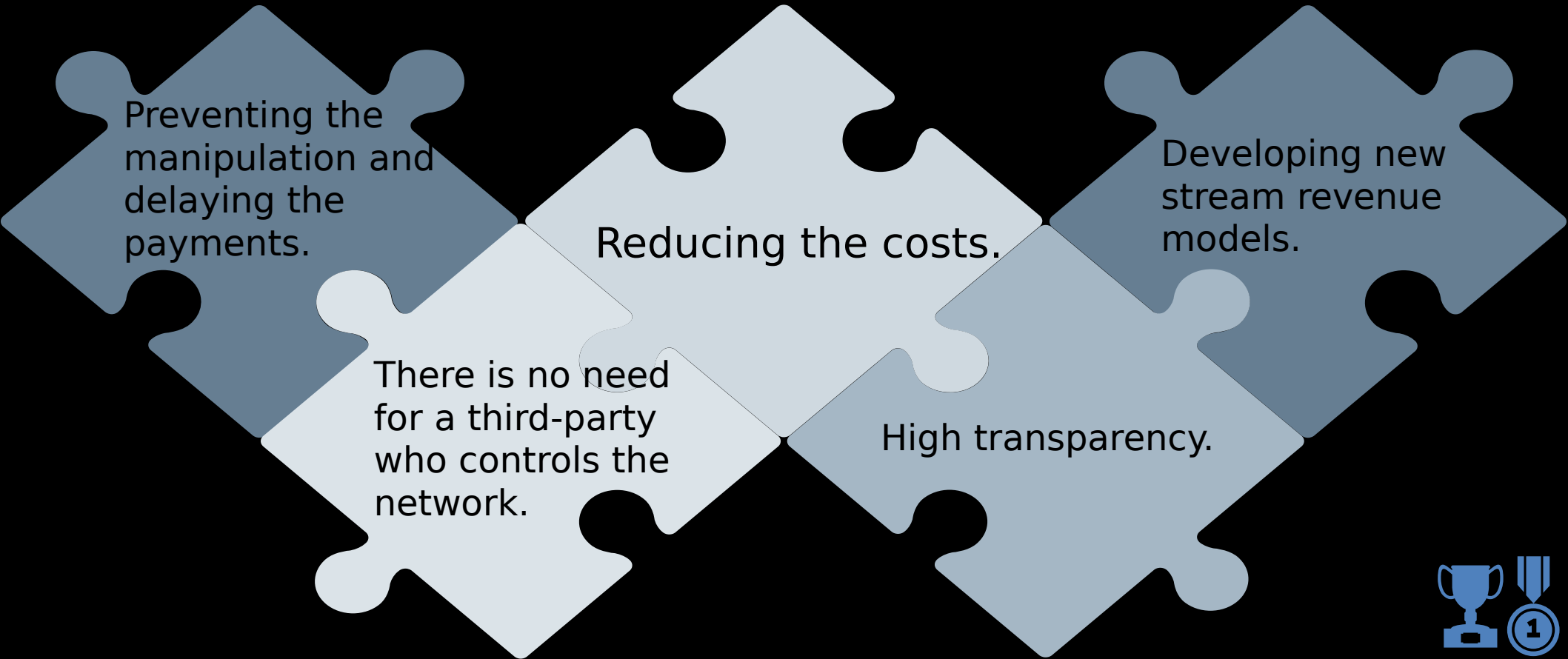
Issues with Traditional Sports and Esports

eSports	Sports
The absence of transparency.	Sponsorship management.
New investments obstacles.	Tickets Scalping.
The anonymity of the players identity.	Limitation of revenue stream models.
The existence of third-party(distributors).	

Sports and Esports Development after Blockchain



Sports and Esports Development after Blockchain cont.



Sporty.co

Sporty.co is one of the firms who deployed blockchain technology in the sport industry. It published white paper in order to explain the big transformation towards using blockchain crowdfunding platform that helps athletes, teams, and other sports organizations raise the money they need to succeed.

Blockchain in Government and the Public Sector

Government Systems and Public Sectors

Public Sectors: The grouping of units owned or controlled by public units is referred to as the public sector, Managed and funded mainly by the government, and all public companies.

- All publicly controlled or publicly funded agencies/enterprises
- Other entities that deliver public programs, goods, or services

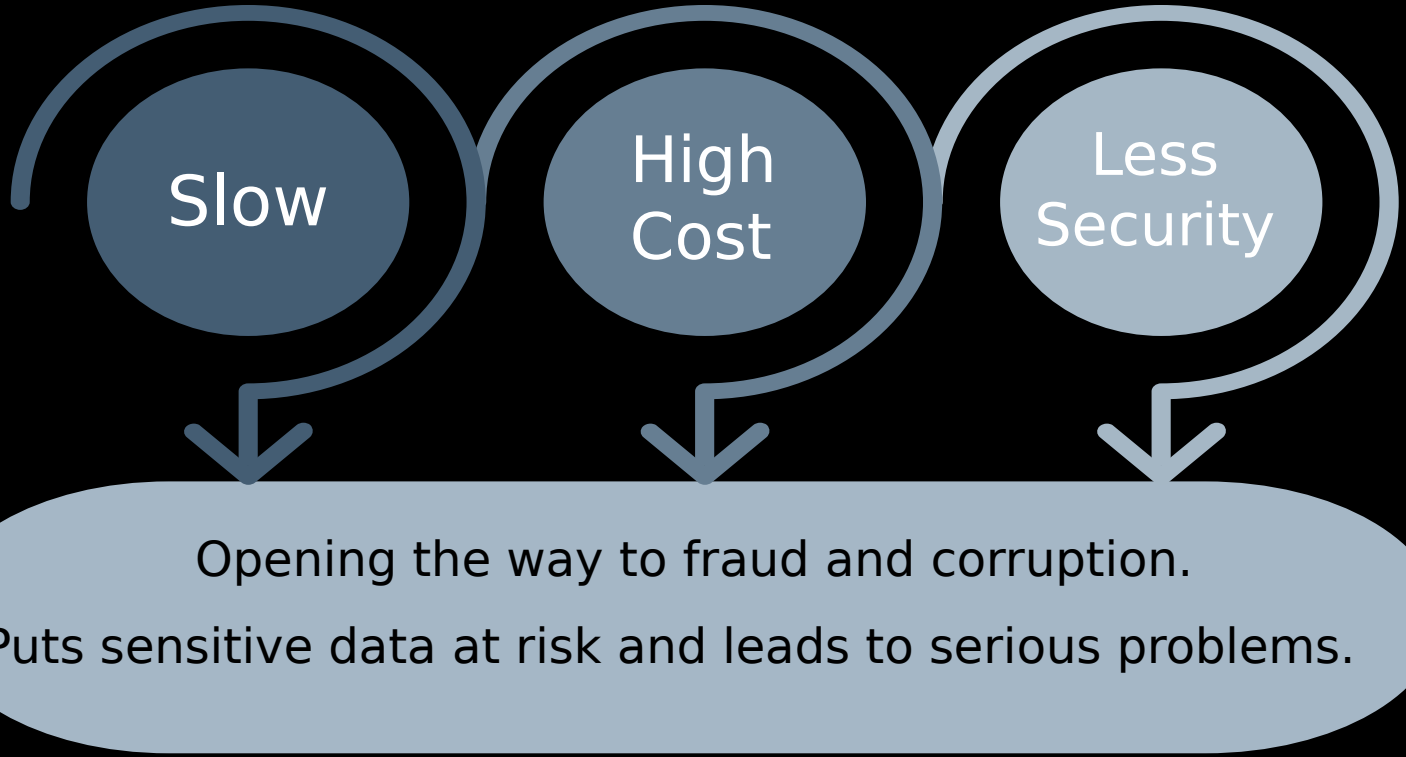
Government Systems and Public Sectors

Government Systems: Systems used by the governments in order to accomplish its duties such as payments, land registration, voting for elections, healthcare, taxation, corporate registration, identity management, and legal entities management.

- All publicly controlled or publicly funded agencies/enterprises
- Other entities that deliver public programs, goods, or services

Governments and Public sectors before blockchain

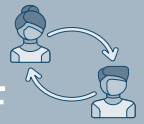
Most of the governments and public sectors depend on old-fashioned methods and systems.



Governments Systems after blockchain

Blockchain-based digital government

Safe exchange of resources and data.

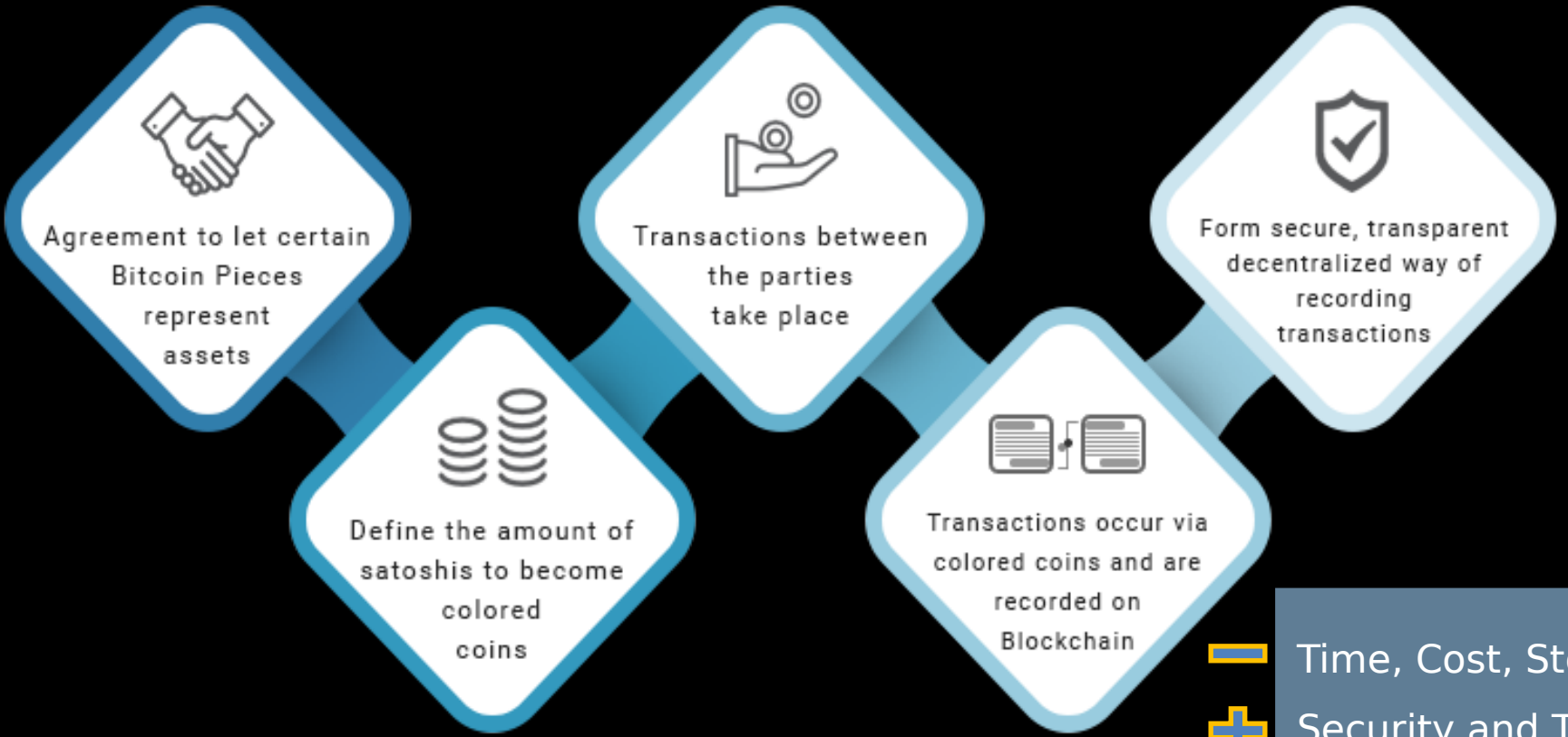


Structure is immutable (no fraud or data theft).

Transparent government process (increase people's confidence in the system).

Saving time and money (automating a lot of activities).

Public Sectors after blockchain



− Time, Cost, Storage and Fraud

\+ Security and Trust

Government and Blockchain

- Benefits
  - Time
  - Cost
  - Risks of managing sensitive information
- Providing an immutable and transparent audit trail for regulatory compliance, contract management, identity management and citizen services.

Examples

◊ Government-led blockchain projects:

China → Blockchain-based asset custody(more than 100 transactions).

Dubai → Government documents management system.

◊ Electronic voting systems based on blockchain:

Estonia called i-Voting(National voting system).

Tax

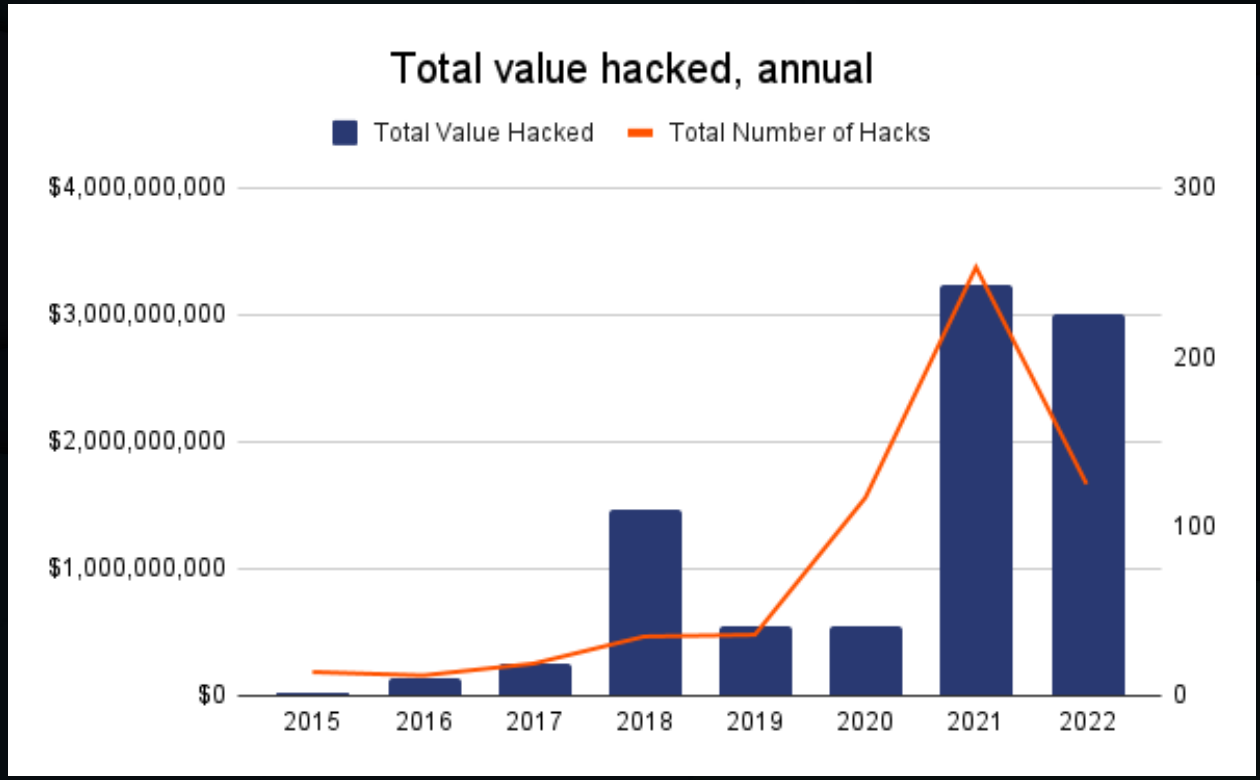
- Transparency, Efficiency, Data integrity, and security, can benefit the tax administration in multiple ways
- decentralization can improve efficiency and the interaction between multiple actors
- Blockchain could help address this problem as it allows information to be captured from many perspectives
- Micro payment (example: Bitcoin Lightning Network)

Islamic Economy

- WAQF
- Sukok
- Haj

Security

John McAfee
47, 61, $5.42B, 250K



crypto’s billionaire club

Changpeng Zhao
(44 years old)
Net worth: $65 billion
Source of wealth: Binance
Citizenship: Canada

Sam Bankman-Fried (SBF)
30 years old
Net worth: $24 billion
Source of wealth: FTX
Citizenship: U.S

crypto’s billionaire club

Brian Armstrong
Net worth: $6.6 billion
Source of wealth: Coinbase
Citizenship: U.S

Vitalik Buterin
(28 years old)
290,000 Ethereum
Net worth: $1B

Negatives

- Dark Web / Drugs / Gambling / Money Laundering
- CryptoKitties
  - ✓ CryptoKitties is a game,
  - ✓ collectible!
  - ✓ Each cat is one-of-a-kind and 100% owned by you;
  - ✓ it cannot be replicated, taken away, or destroyed.
  - ✓ Market Cap: $20M in 2018

NFT (ERC721)

- What is NFT ?

'Ghozali Everyday'

Weird NFT Sold

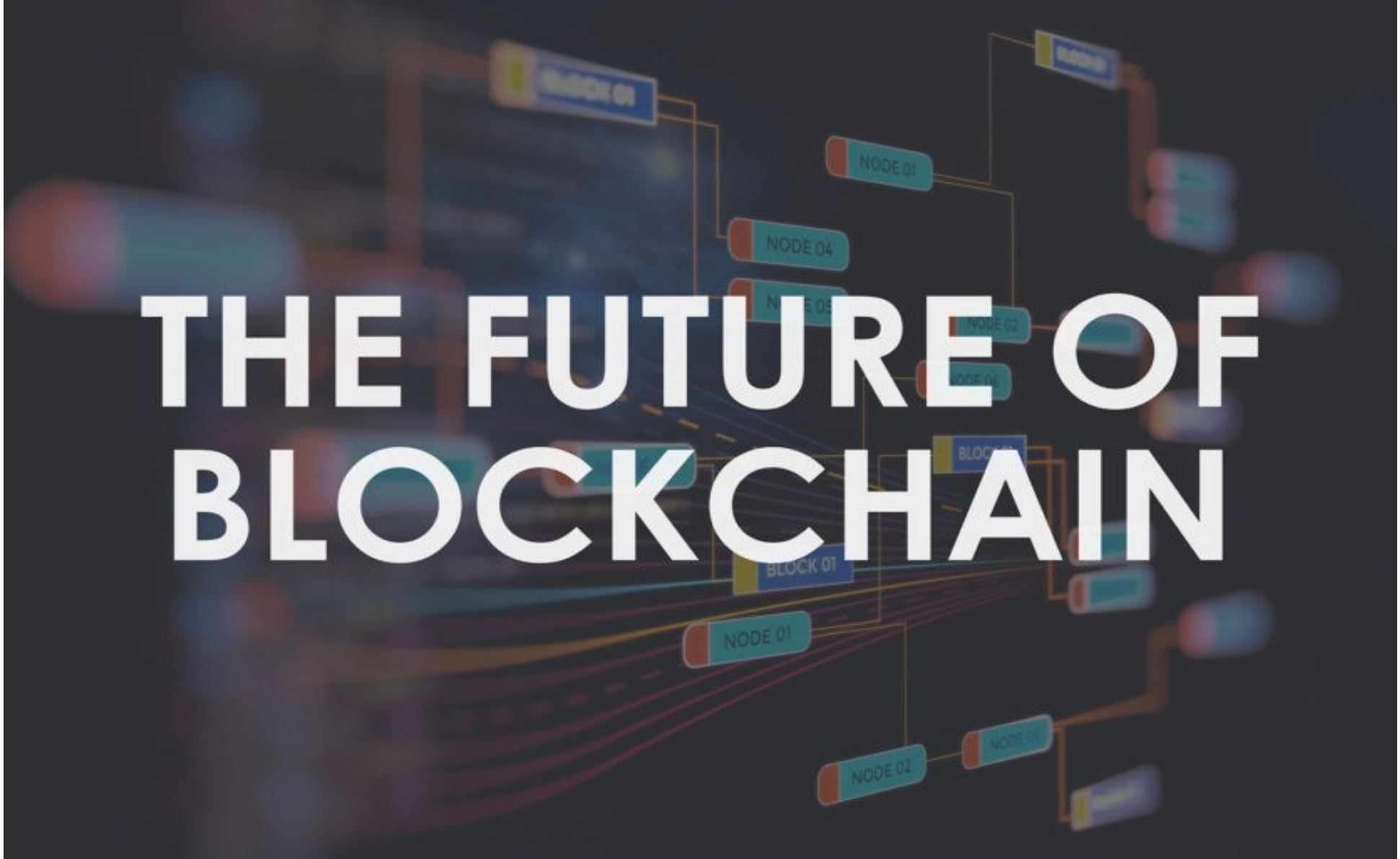
- Jack Dorsey’s First Tweet
- “just setting up my twttr”
  - ✓ Sina Estavi (Oracle CEO)
  - ✓ $2.9M
  - ✓ $48M/$2.9M → $280/$6,800
- Beeple’s (Mike Winkelmann) Trump corpse
  - ✓ 2020, $66,666.60 → $6.6M
- CryptoPunk - $23.7 million
  - ✓ 10,000 24x24 pixel art images
- Bored Ape (10,000)
  - ✓ ?
  - ✓ Justin Bieber $1.31M

Blockchain Jobs

- Startup (?)
- Developer & Engineer ($135,000 - $200,000+ per year)
  - Core developer
  - Tools
  - DApps & Smart Contracts
- Adviser ($56,000 – $107,000 per year)
- Audit ($120,000 and above)
  - Certik (net worth: $2B)
- Solution & Designer (?)

High Salaries

- Increased demand and short supply
- Technology is on everyone’s radar
- Established firms have embraced blockchain and announced initiatives
  - **Microsoft Corp**. (MSFT) has started a blockchain-as-a-service (BAAS) platform within Azure, its cloud division
  - **IBM Corp**. (IBM) has also launched a division dedicated to blockchain, basing it on an open-source fabric Hyperledger.
  - **Social media** behemoth Facebook Inc. (FB) has formed a group to explore blockchain’s uses in its business.
  - Hundreds of DeFi projects and Marketplaces
- A shortage in skills supply has helped further inflate salaries for blockchain experts.
  - Several new initiatives are being launched to plug the gap in supply, from bounty programs to encourage developers to boot camps introducing the technology to developers.
  - Universities are also in on the game and have launched online courses to educate professionals.


THE FUTURE OF
BLOCKCHAIN
NODE 01
NODE 04
NODE 02
BLOCK 01
NODE 01
NODE 02

The Future of Blockchain

SoftUni Foundation

Blockchain Future

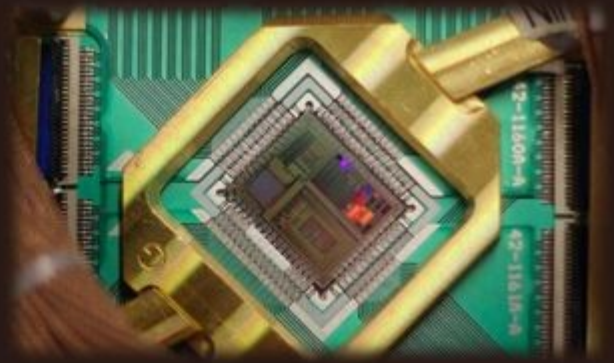
Democratization and decentralization

Remove middlemen

Disrupt many industries

Quantum Computers?

Blockchain will need a major transformation!



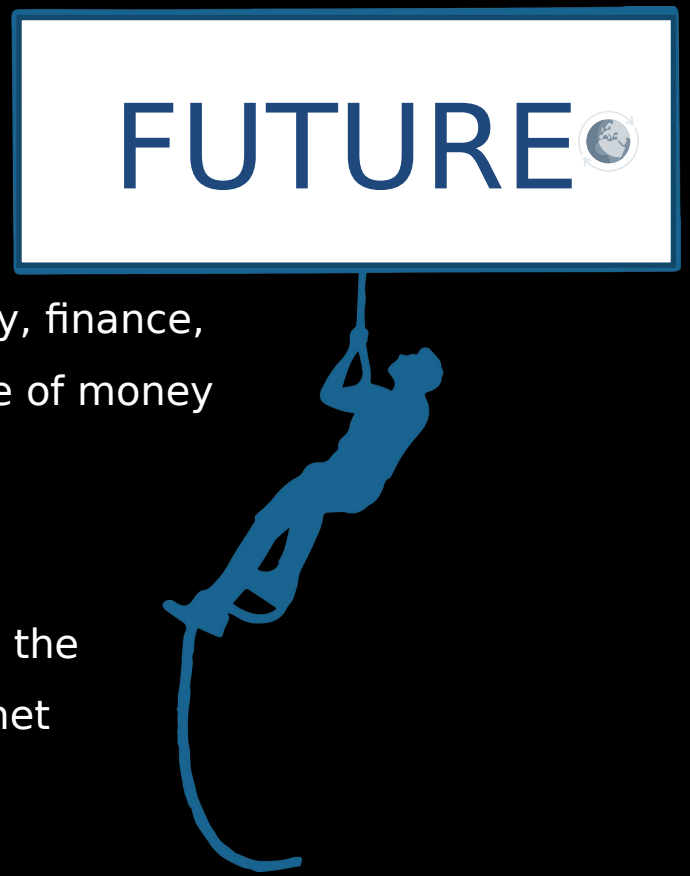
Future of Blockchain

“The Future Will Be Decentralized. Who will control the next big thing online? Everyone and no one.”
- Tyler Cowen

“Blockchain technology has the potential to revolutionize industry, finance, and government—a must read for anyone interested in the future of money and humanity.”

- Perianne Boring

“We believe that blockchain technology will be transformative in the tech and IT sector in the coming years, similar to what the internet did for the world back in the 90s and early 2000s,”
- John Zanni



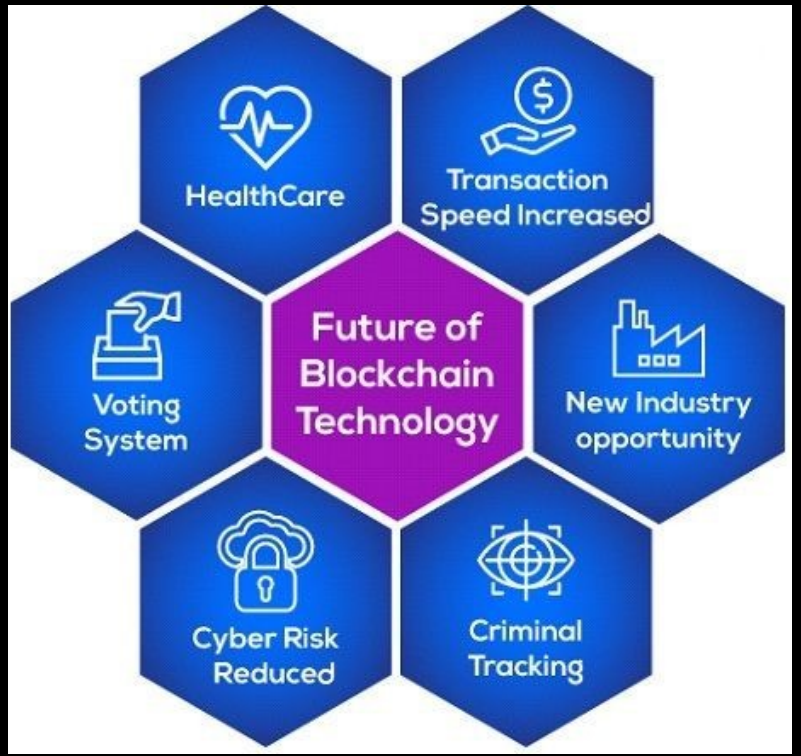
Future of Blockchain

Empower people in developing countries.

The use in voting systems.

CBDCs

That DeFi Will Continue to Increase(Decentralized finance).



Future of Blockchain

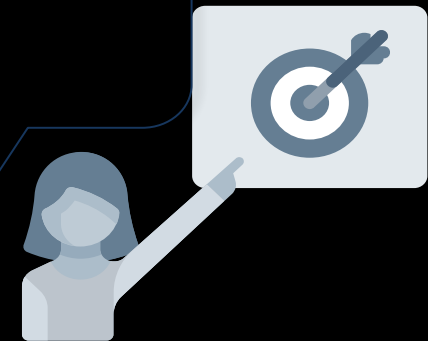
- ✓ The number of transactions beyond conventional mechanisms and mediums would increase substantially.
- ✓ Help in improving the safety of big Data.
- ✓ Democratize ownership and sharing of big data.

Future of Blockchain

- ✓ Blockchain is the future for the world and it could be the next generation of the Internet.
- ✓ Blockchain has overcome the centralized system issues.
- ✓ Blockchain technology has the ability to solve a lot of problems by its characteristics.
- ✓ **Benefits**:
  - Unintentional deletion
  - Alteration of data
  - Time, Cost and Effort(for each transaction)

Recommendations

* Keep on searching Blockchain development and applications in various fields.
* Invest more in blockchain (research, apply it in order to develop).
* Starting new majors/courses related to blockchain technology in universities.
* Conducting more time and work to the application and incorporation of the Blockchain into the key industrial directions.



Looking ahead to 2024

- a lack of understanding could very well lead to risk for governments and companies in the future.
- move to the next generation of web development are going to need to get into cryptocurrency
- adoption of crypto and stablecoins
- Asia is a hot spot for crypto infrastructure, stablecoins and the CeFi/DeFi market.
  - ✓ 100% to 150% growth in crypto adoption in Asia.
  - ✓ TRON, for example, is handling around 10 million transactions every day, with around 5 to 6 million active users
- decentralized identity (dID)
  - ✓ soulbound items (SBT)
  - ✓ powerful items that cannot be transferred or sold to other players after a user picks it up
- his technology will soon be implemented by countries around the world and create a more compliant and robust system
- Blockchain Gaming Industry
- Regulatory

References to learn Blockchain

- Udemy (https://www.udemy.com/topic/blockchain)
- MIT courses (https://ocw.mit.edu/courses/15-s12-blockchain-and-money-fall-2018/)
- Github Index: https://gist.github.com/sin2akshay/65cdfe2f7fa1f84b4914f188d49d5323
- Crypto Zombies (https://cryptozombies.io/)
- Learn Blockchain, Solidity, and Full Stack Web3 Development with JavaScript — 32-Hour Course (https://youtu.be/gyMwXuJrbJQ)
- Alchemy University:
  - 1. JavaScript Fundamentals
  - 2. Ethereum Developer Bootcamp
  - 3. Road to Web3
- SPEEDRUN ETHEREUM (https://speedrunethereum.com)
- Buildspace (https://buildspace.so)
- LearnWeb3 (https://learnweb3.io)
- BANKLESS ACADEMY (https://app.banklessacademy.com)
- Developer DAO Academy (https://school-of-code.vercel.app)
- Ethereum Developer Resources (https://ethereum.org/en/developers)


Q&A

Test 1

- Bitcoin (Digital Gold) vs Gold

Test 2

- Distributed Database vs Blockchain

Test 3

- Blockchain Application