

Blockchain Fundamentals

Blockchain Made Easy





Abstract

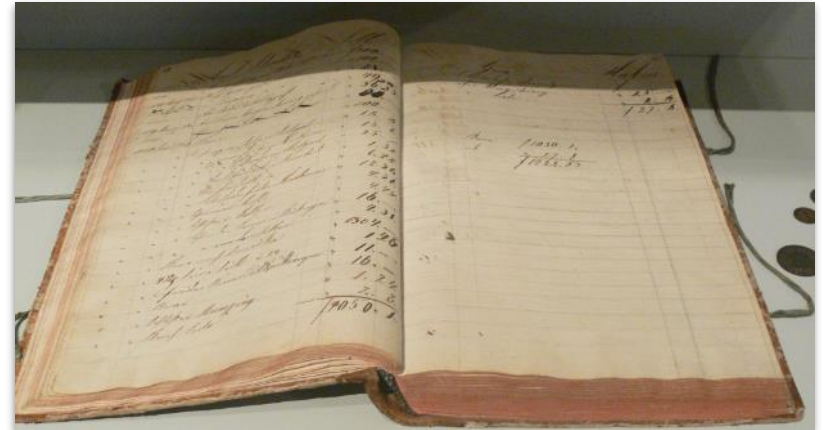
- What exactly is Blockchain Technology
- Must know Blockchain Terms
- What are Smart Contracts?
- Blockchain Digital Transformation
- How Blockchain will change our world?



What is Blockchain?

“Open, distributed ledger that can record transactions between two parties efficiently and in a verifiable and permanent way” [wikipedia.org](https://en.wikipedia.org/wiki/Blockchain)

- ✓ Open
- ✓ Distributed
- ✓ Ledger
- ✓ P2P
- ✓ Permanent



How Does a Blockchain Work: A Step-by-Step View



1 A user requests for a transaction



2 A block representing the transaction is created



3 The block is broadcasted to all the nodes of the network



4 All the nodes validate the block and the transaction



5 The block is added to the chain



6 The transaction gets verified and executed

Remarkable Benefits of Blockchain Technology



Faster Settlement

Way faster than the manual process of validation



Immutable

The transactions cannot be undone if they are already on the blockchain



Increase Network Capacity

Much more capable than the traditional network



Shared and Distributed

Blockchain technology offers a shared and distributed ledger that is open for all users



More Secured

Much safer than the traditional methods

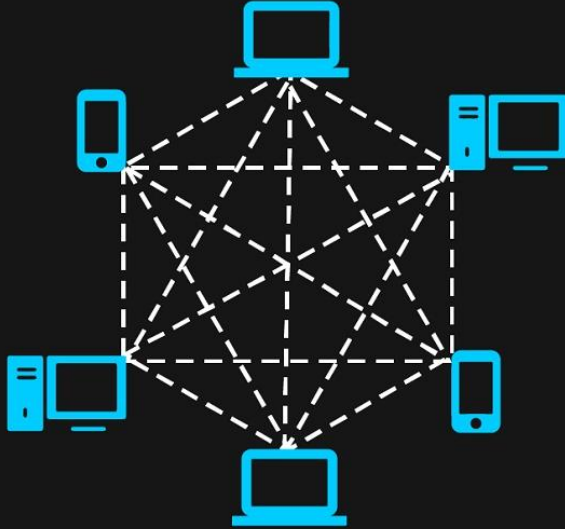


Decentralized

Not dependable on server based technology and no one has authority over the system



Public vs Private Blockchain Network



Public Blockchain: Permissionless

An open network system where all the devices can freely access without any kind of permission. The ledger is shared and transparent.

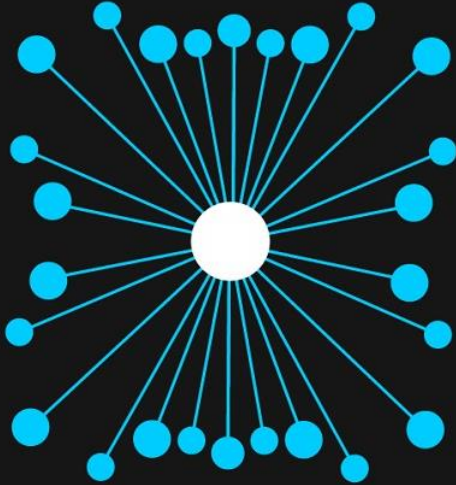


Private Blockchain: Permissioned

A user has to be permitted by the blockchain authority before he/she could access the network. The user might join only if he/she gets an invitation.

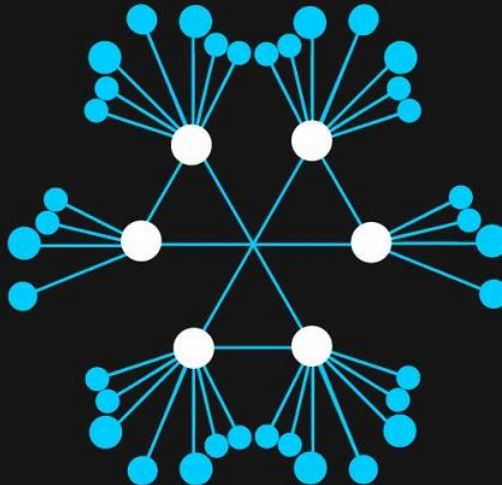


Centralized vs Decentralized vs Distributed Network: An Overview



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



Must know Blockchain Terms

- **Airdrop:** Airdrop is a process of distributed free cryptocurrency coins to the general public.
- **Altcoin:** Altcoin is any cryptocurrency other than Bitcoin.
- **Bitcoin:** Bitcoin is the first cryptocurrency that came into existence in 2009 by Satoshi Nakamoto. It is a digital currency that doesn't require a centralized authority to work or function.
- **DAO:** DAO stands for the decentralized autonomous organization.
- **dApp:** dApp stands for the decentralized applications that run without the control of a central authority.
- **ERC-20:** ERC-20 is a technical standard for issuing tokens on Ethereum blockchain.
- **Ether:** Ether is the fuel that powers distributed Ethereum network.
- **Fiat:** Fiat is the government-controlled currency and is declared as legal tender.
- **ICO:** ICO stands for Initial Coin Offering that is used by startups to raise funds by selling tokens.
- **Mainnet:** Mainnet is a working blockchain product that also provides the ability to transfer digital currencies between users in a blockchain environment.



Must know Blockchain Terms

- **51% Attack:** 51% attack is a common vulnerability with blockchain technology. It can be exploited by a group of miners if they control 51% of the hash rate of the whole network.
- **Utility Token:** Utility token is token that has a utility attached to it. They are used for accessing a product or service.
- **DYOR:** DYOR stands for "Do Your Own Research".
- **FOMO:** FOMO stands for Fear Of Missing Out.
- **FUD:** FUD stands for Fear, Uncertainty, and Doubt .

Smart Contract Explained



- ✓ A contract is created between two parties
- ✓ Both parties remain anonymous
- ✓ The contract is stored on a public ledger



- ✓ Some triggering events are set i.e. deadlines
- ✓ The contract self-executes as per written codes



- ✓ Regulators and users can analyze all the activities.
- ✓ Predict market uncertainties and trends

How Do Smart Contracts Work?



Registered



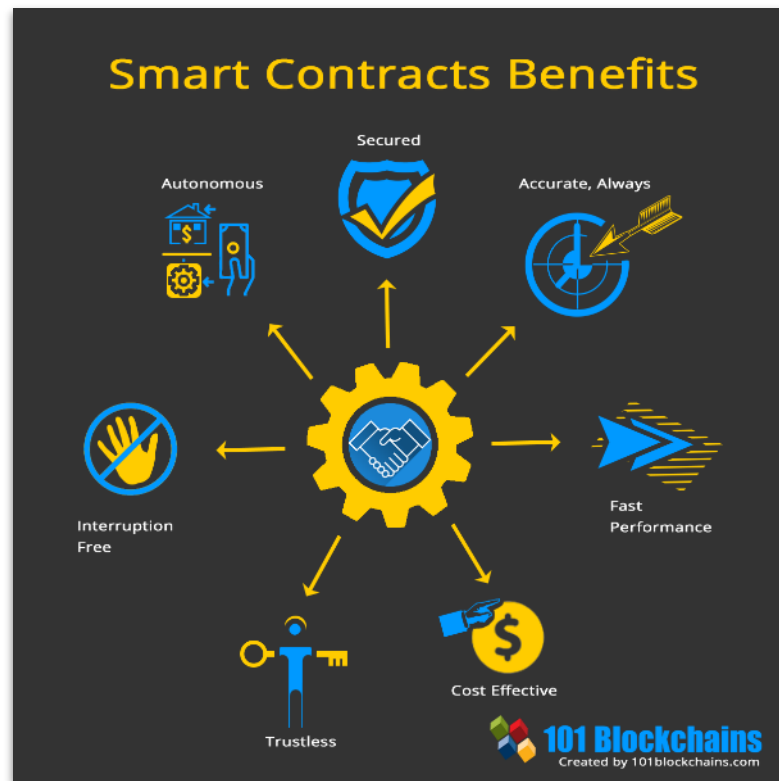
Automated
Settlement of
Contracts



No Third
Party Need

What Are the Advantages of Smart Contracts?

- ✓ Total Transparency
- ✓ No Miscommunication
- ✓ Efficient Performance
- ✓ No Paperwork
- ✓ Backup
- ✓ Trustworthy
- ✓ Guaranteed Outcomes





Disadvantages of Smart Contracts

- × Confidentiality
- × Error
- × Rogue Contracts

“Whereas most technologies tend to automate workers on the periphery doing menial tasks, blockchains automate away the center.

Instead of putting the taxi driver out of a job, blockchain puts Uber out of a job and lets the taxi drivers work with the customer directly.”

[Vitalik Buterin](#)

Smart Contracts Use Cases



Record Storing



Trading
Activities



Supply Chains



Mortgage



Real Estate
Market



Employment
Arrangements



Copyright
Protection



Healthcare
Services



Government
Voting



Insurance
Claims



Internet-of-
Things (IoT)

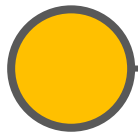


Is the Blockchain overhyped?

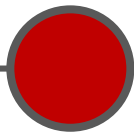
*"The truth is no online database will replace your daily newspaper, no CD-ROM can take the place of a competent teacher and **no computer network** will change the way government works."*

Clifford Stoll 2/26/95

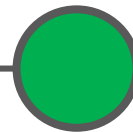
Expectations



Disappointment



Production



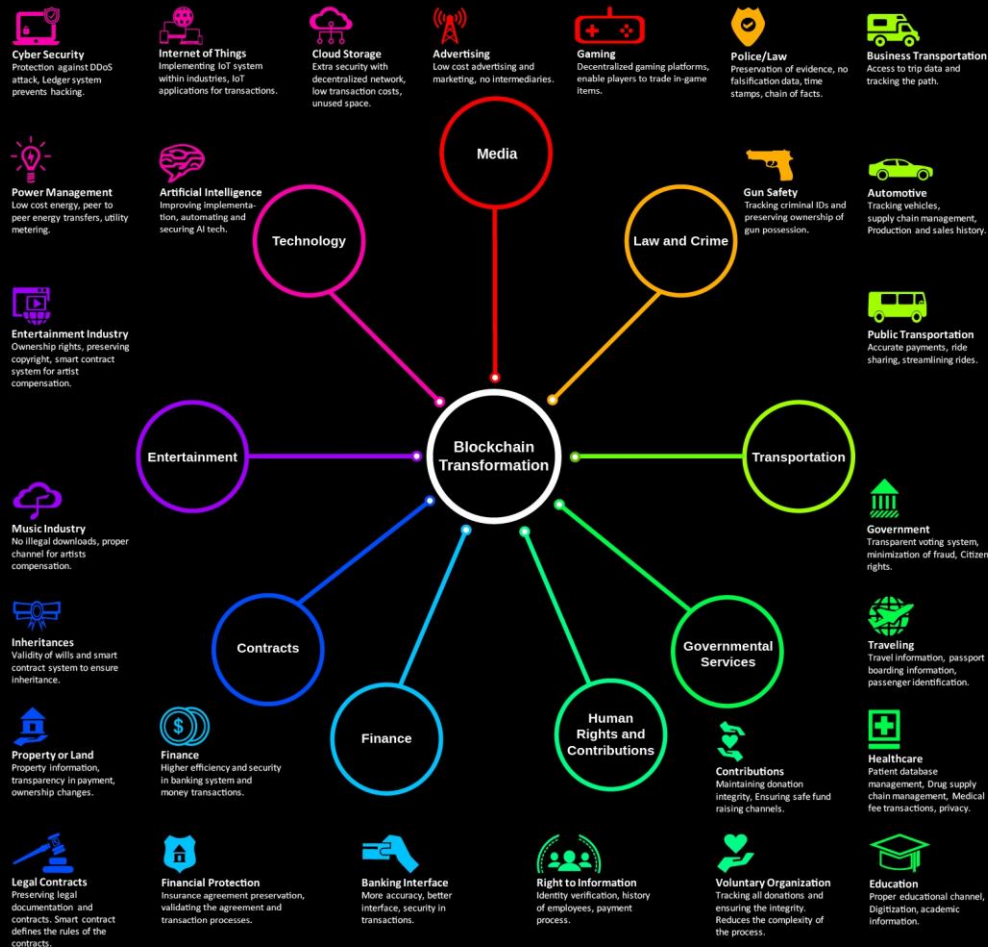
We are here



9 Verticals of Blockchain Transformation

1. Technology
2. Media
3. Law and Crime
4. Transportation
5. Governmental Services
6. Human Rights
7. Finance
8. Contracts
9. Entertainment

Blockchain Digital Transformation





2017-2018 Leading Sectors

- Supply Chains
- Fintech
- And more...
- Retail
- Shipping
- Mining
- Healthcare
- Insurance

Enterprises Which Are Implementing Blockchain Technology



Apple
Patented blockchain technology for time stamping data.



Facebook
Exploring the use of blockchain to enhance data security and users privacy.



Google
Exploring the use of blockchain technology to enhance cloud service security and for data protection.



Baidu
Using blockchain to enhance intellectual rights management.



Ford
Leveraging blockchain technology to enhance the mobility of technologies.



Tencent
A Solution for verifying invoice authenticity and for ensuring tax compliance.



Alibaba
Using blockchain technology to track luxury goods in its e-commerce platforms.



Prudential
Unveils a blockchain powered trading platform for small and medium-sized enterprises.



BHP Billiton
Leveraging blockchain technology for supply chains management.



FedEx
Working on blockchain solution for settling customer disputes.



Nestle
Using blockchain technology in supply management to track baby food products.



Maersk
Blockchain system for tracking movement of shipments between ports.



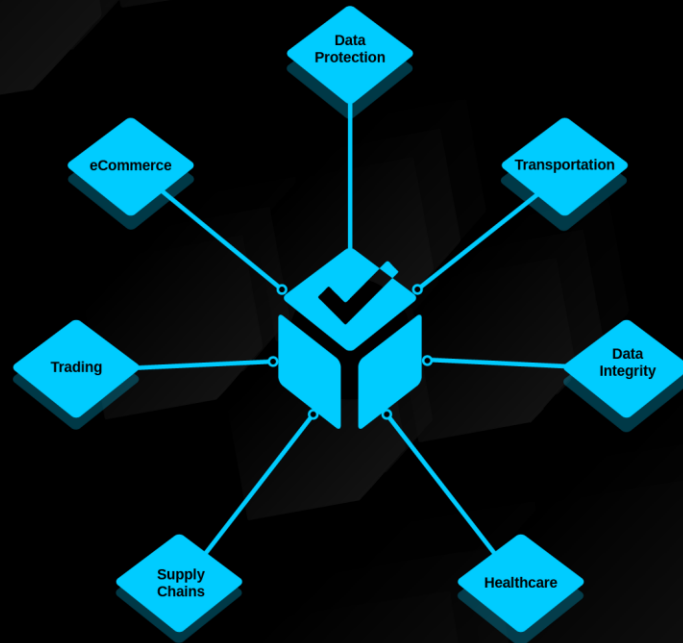
UPS
Blockchain powered logistics monitoring and management solution.



Samsung
Intends to use blockchain technology to enhance supply chain management when it comes to electronics shipments.



Walmart
Using blockchain technology to track product movement from farmers to stores.



Toyota
Planning to use blockchain technology to enhance autonomous driving technology.



British Airways
Implementing blockchain to manage flight data as well as verifying travelers identity.



AIA Group
Launched the first of its kind bancassurance for sharing policy data.



UnitedHealthcare
Using blockchain technology to improve doctors directories to enable accurate insurance claim fillings.



MetLife
Using blockchain technology for storing patients medical records for insurance purposes.

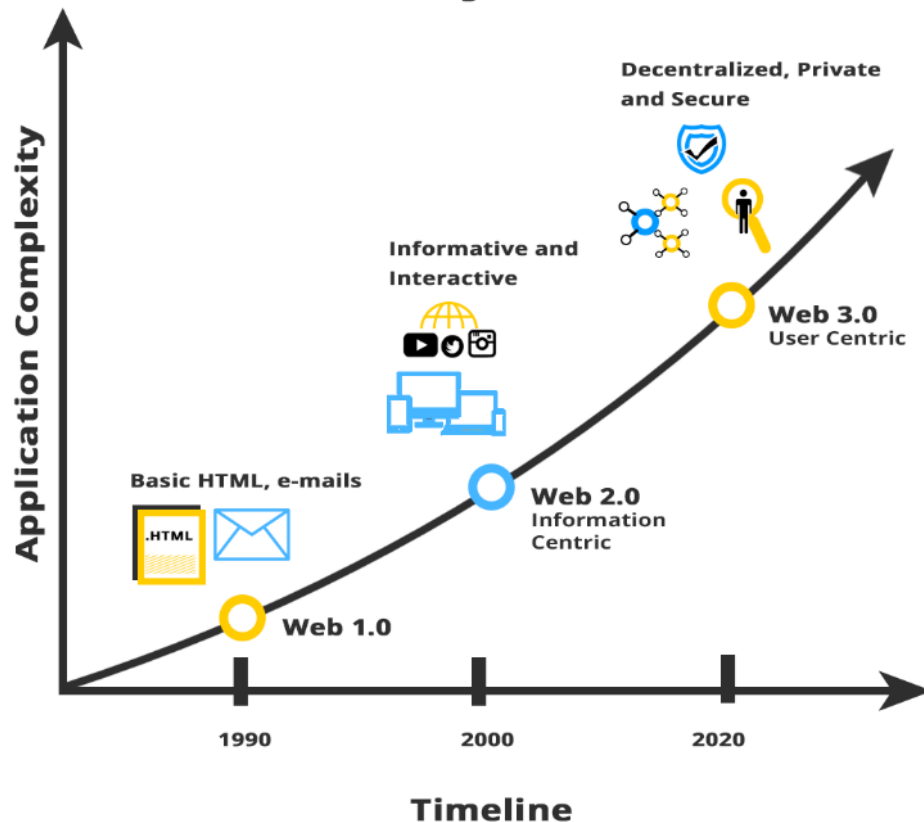


Web 3.0

Web 3.0 is the 3rd generation of the internet where the devices are connected in a decentralized network rather depending on server-based databases.

The new internet is a user-centric, more secured, private and better connected.

The History of the Web





Web 3.0 Benefits

- Anti-monopoly
- Pro-privacy
- Secure network
- Data Ownership
- Interoperability
- No interruption in service
- Permissionless blockchains
- Semantic Web
- Ubiquity

Web 3.0 Benefits



Anti-monopoly
and Pro-privacy



Secure Network



Data Ownership



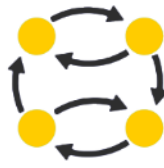
Interoperability



No interruption
in service



Permissionless
blockchains



Semantic Web



Ubiquity





Remember

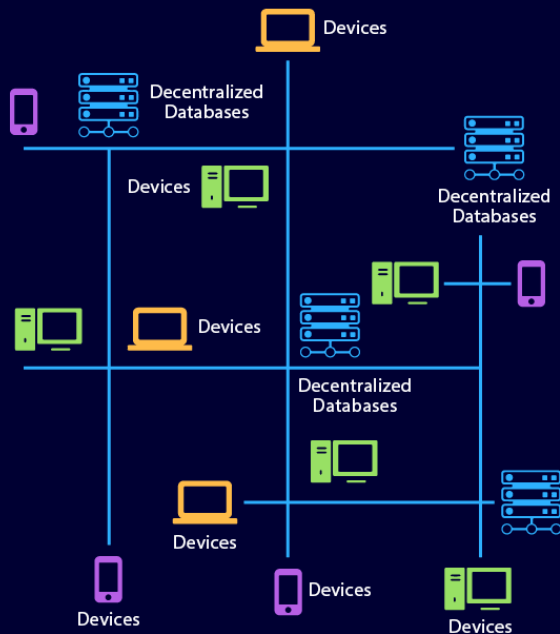
- Decentralized Internet
- No central authority
- Data Flow
- New Business Models
- dApps

Centralized vs Decentralized Internet

BEFORE



AFTER

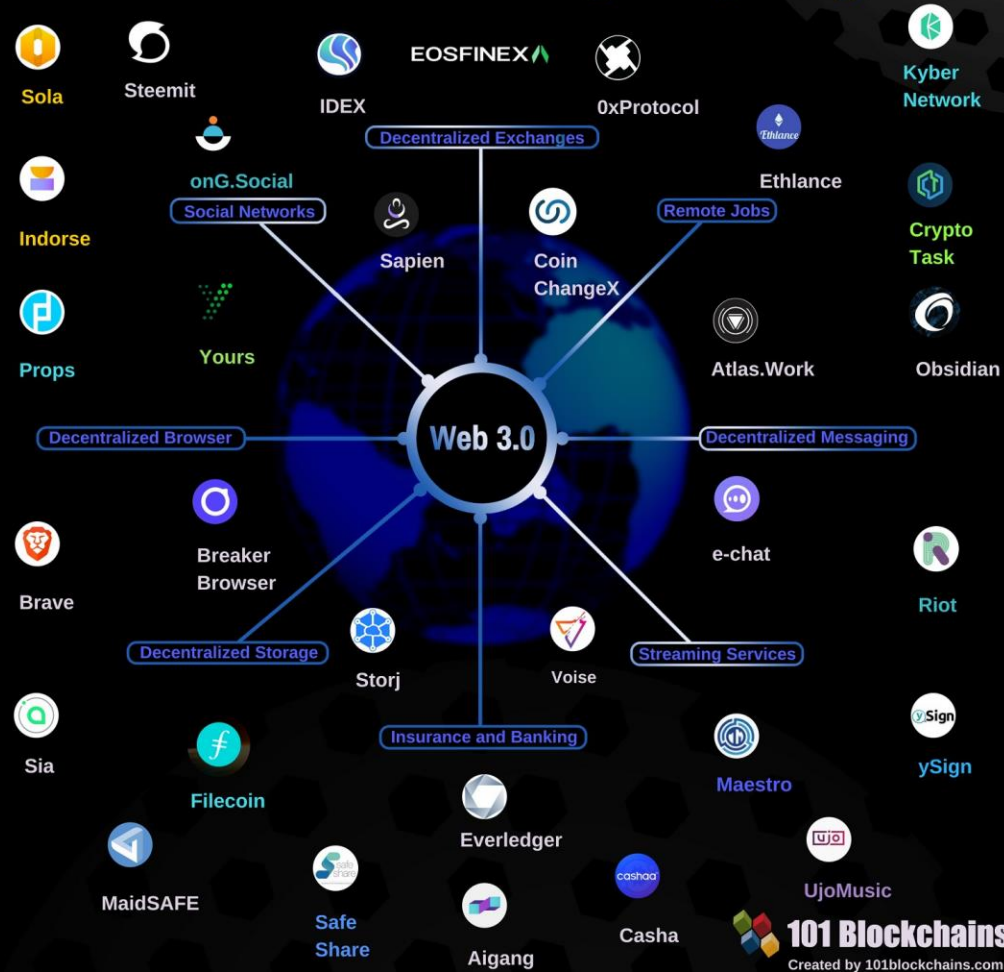




Web 3.0 Ecosystem

- Social Networks
- Exchange Services
- Messaging
- Storage Services
- Insurance and Banking
- Streaming Services
- Remote Jobs
- Browsers

Web 3.0 - Decentralizing Everything



Is Database Enough? A comparison Between Blockchain and Database

Bonus #1

Blockchain vs Database

- Integrity
- Write Access
- Cost
- Trust

No one has the central authority.



Modifying data or asset is nearly impossible.



All the data or activity is out in the open for everyone to see.



Cuts down the excessive costing.



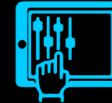
Blockchains are slow.



Suited for an organization where users don't trust each other.



Selected groups of individuals have authoritative control.



Data or assets can be easily changed.



All the data or transactions are hidden from each other.



Implementing process is costly.



Databases are comparatively faster.



Suited for an organization where there is mutual trust.

Bonus #2

Different Types of Tokens

- Currency Tokens
- Asset Tokens
- Utility Tokens
- Equity Tokens

Different Types of Tokens

Currency Tokens

Used as a currency on the network such as Bitcoin, Nano.



Asset Tokens

These represent particular or physical products as assets such as DGX (DigixDAO Gold).



Utility Tokens

Used for performing any kind of activity on the network such as ETH (Ethereum).



Equity Tokens

These tokens gives voting rights or a share of the network such as LSK (Lisk).



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20 Enterprises Which Are Implementing Blockchain Technology

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Blockchain Digital Transformation- 30+ Blockchain Transformation Examples

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Web 3.0 Will Be Powered by Blockchain Technology Stack

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35+ Web 3.0 Examples Of How Blockchain Is Changing The Web

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