



Systemic Management of Blockchain Technologies (BT)

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What is Blockchain Technology (BT) ?

How the Internet of Things (IoT), 5G Networks and Artificial Intelligence (AI) can be combined with BT ?

What are the Smart Contracts ?

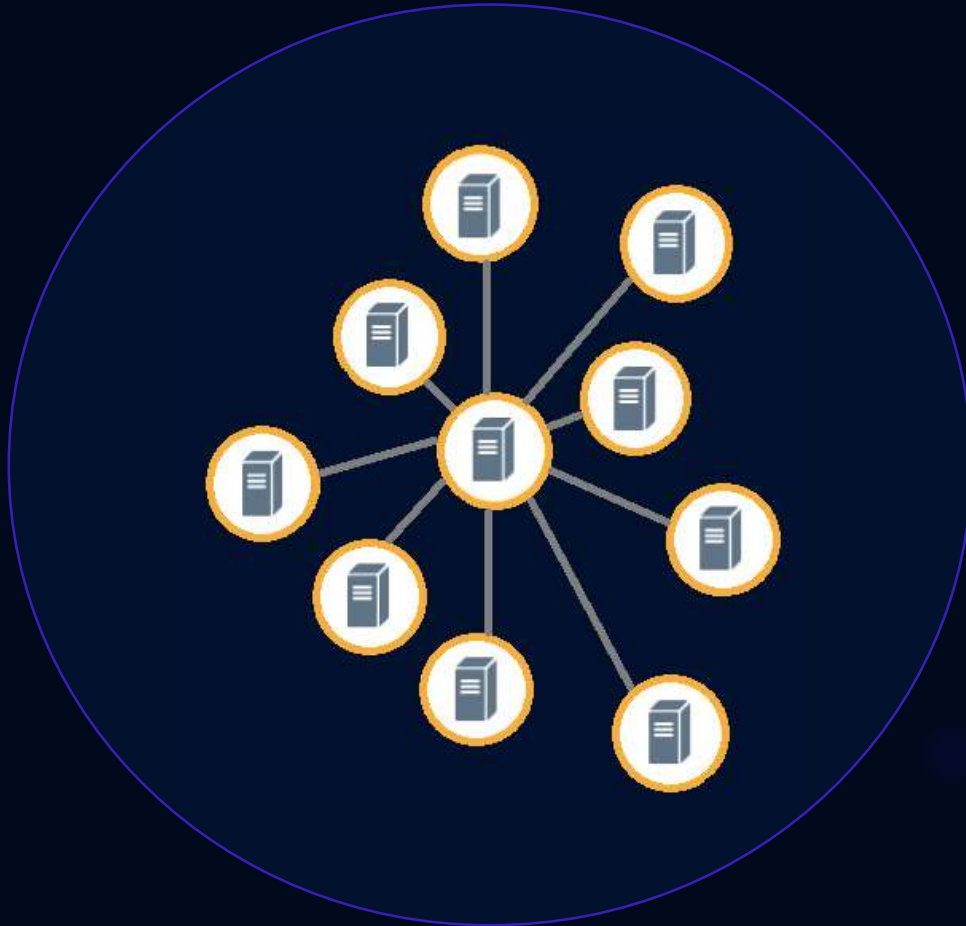
What are the Cryptocurrencies?

What is Business Intelligence (BI)?

How BT are going to empower and boost our company's BI?

What is System and Systems Thinking?

What should be the characteristics of the new Managers generation?

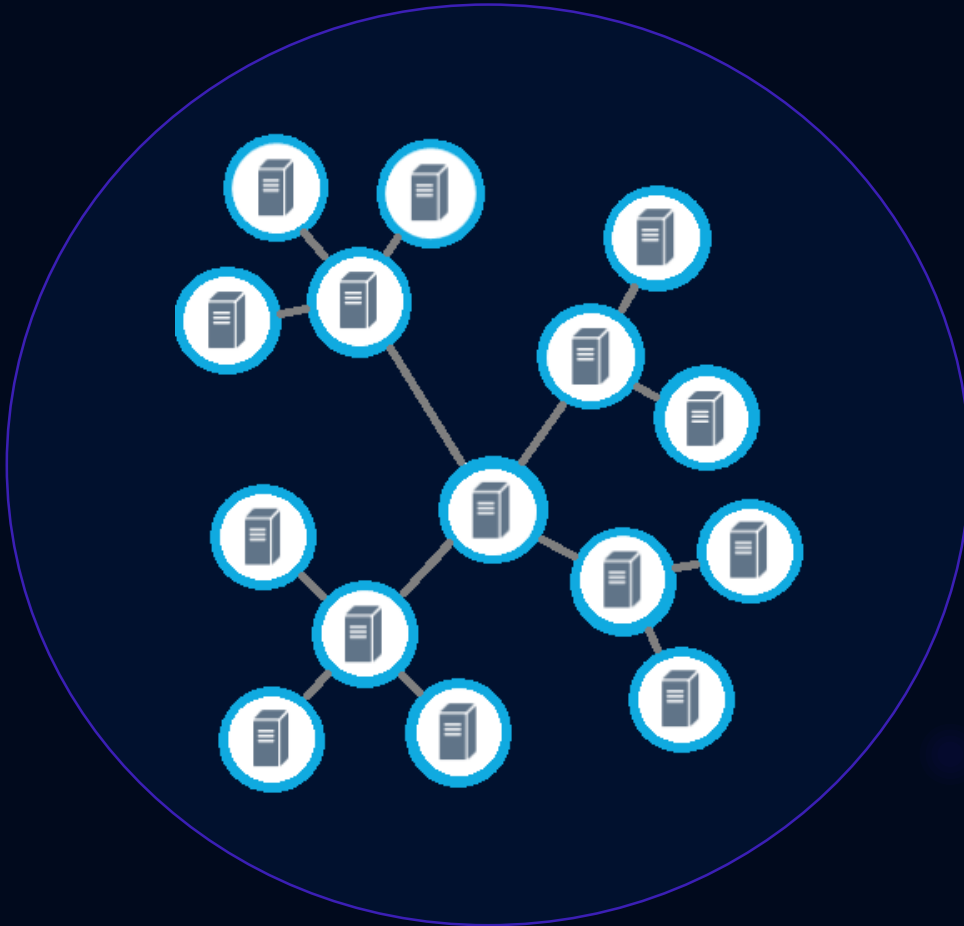


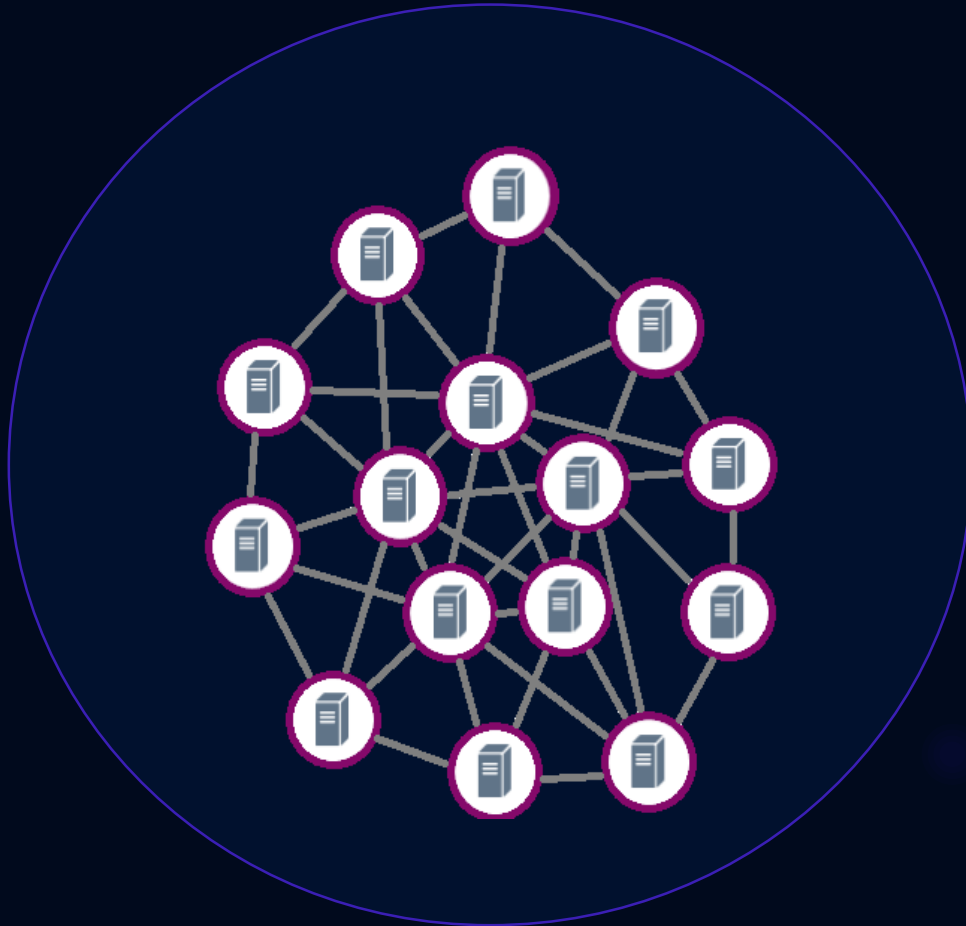
Centralized Networks

- ❖ There is a Central controlling entity (node) which is responsible for the authentication of the network's nodes and controls all other components communications.
- ❖ A stand-alone information System where the **data/transactions** are stored on a unique ledger.
- ❖ Proper Security Equipment (Firewall etc) are used to ensure **data Confidentiality, Integrity & Availability** (CIA).

Decentralized Networks

- ❖ There is ***NO Central Controlling Entity (node)***.
- ❖ Instead, the control is shared among several independent entities (nodes).
- ❖ An entire database is splintered in parts and distributed to different nodes for storage and use.
- ❖ In decentralized systems, every node makes its own decision for storing a new transaction record
- ❖ **High Availability**, due to the fact that some nodes are always available/online.



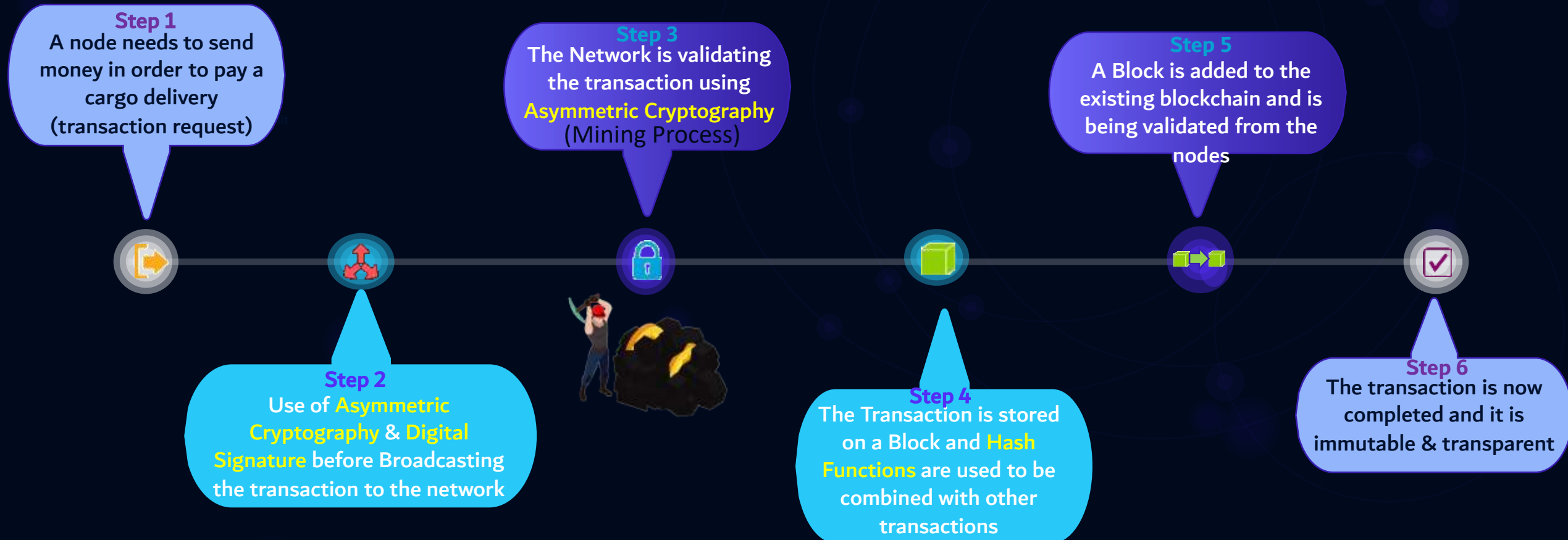


● Distributed Networks

- ❖ There is ***NO Central Control or Shared Control*** (*peer-to-peer architecture*).
- ❖ Every node is located on a different computer network, but it interacts with other nodes in order to achieve a common goal.
- ❖ The common goal is to maintain the integrity of transactions, because each transaction determines the owner of an asset.
- ❖ Every node wants to record its new transaction, but there is a mechanism (**CONSENSUS** protocols) for common agreement/ verification of new transactions.

Blockchain Roadmap

Blockchain is a **Business Network Platform** (DApps), which warrants transparency while protecting individuals personal data (stored on a distributed ledger).



About Smart Contracts

- ❖ Translates the contractual clauses into a **code of events & functions** (Solidity).
- ❖ When **a function /event is triggered**, the contract self-executes and can verify the enforcement of predefined terms of contract.
- ❖ It governs business transactions and agreements in multi-party settings.

Contract Rules (e.g)

1. Receiver deposits the payment before the shipping
2. Shipment reaches with no violations, then the payment “unlocks”
2. Receiver has 48h to enter the **hash passphrase** on smart contract
3. Receipt of cargo, only after validation of hash passphrase
4. If rule violations occur during transportation, (a)the shipment returns to dispatcher & (b) 50% of payment is refunded to the receiver.
5.

Internet of Things (IoT) Artificial Intelligence (AI)

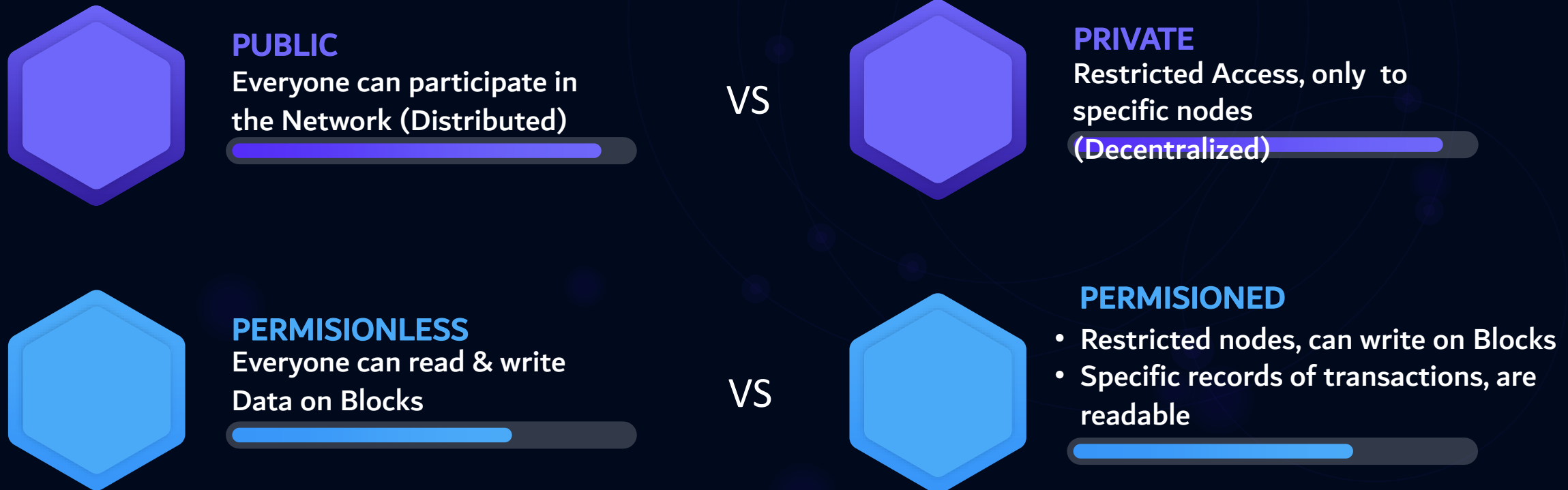


- ❖ A network of sensors (IoT) on products, on pallets, on containers will trigger alerts (calling functions of the smart contract – using 5G Networks) if any violation occurs on:
Temperature, pressure, humidity, light exposure, sudden fall, illegal unboxing - illegal opening of the container, toxicity exposure, geographical location etc.
- ❖ Radio Frequency Identification (RFID Tags), Electronic Product Codes (EPC), GPS Trackers, Intelligent Insulating Shipping Containers (IISC) etc.
- ❖ AI Algorithms are going to evaluate the distribution channels according to frequency of violations, and will propose the best channels on Supply Chain (according to the nature of cargo/product).

Blockchain Versions

We divide Blockchains in four (4) versions, according to the rights of each node, for **reading** and **writing** access on Blocks

(The decision concerning reading and writing access can be made Independently)



1. Cryptocurrencies (Coins & Tokens)

2. Initial Coin Offering (ICO)

Cryptocurrency are Blockchain-Based Electronic Money based on peer-to-peer networks & Cryptographic Tools



Coins



- ❖ When a Blockchain is created we must specify the coin
- ❖ People use coins to:
 1. Pay for goods and services
 2. Trade for other currencies
 3. Store as an investment

Tokens



- ❖ Tokens are created only on existing Blockchains
- ❖ Tokens are far easier to create than coins
- ❖ People use tokens to:
 1. Activate features on DApps

ICOs



- ❖ It is the cryptocurrency industry's equivalent to an Initial Public Offering (IPO)
- ❖ ICOs act as a way to raise funds when a company wants to raise money to create a new coin /product / application / service.

Business Intelligence (BI)

- ❖ A set of technics, methodologies, models and tools which are being used to collect & analyze internal, structured data & business processes.
e.g Transactions, Products Prices, Incomes, Sales etc.
- ❖ **BI** aims on Decision Making Process Optimization.
- ❖ **BI** can be divided in: (a) Querying, (2) Reporting and (3) Business Analytics.

BI



BT



Blockchain Benefits

- ❖ BT provides **transaction Transparency** which ensures the ownership of assets.
- ❖ BT provides **Data Integrity / Immutability**
- ❖ With **Distributed Ledger** more complicated queries can be developed.
- ❖ Analyzing linked data can lead to **better Strategic Decisions**.





Blockchain Benefits

- ❖ BT provides a **new network of Supply Chain Partners**.
e.g Shipping Companies, Shipping Agencies, Shipping Carriers, Freight Forwarders or/and Ocean Freight Forwarders, Packaging Companies, Customs Offices, Certifiers etc.
- ❖ BT combined with **IoT & 5G Networks** provides the ability to **track a product** and **trace possible violations** throughout a Supply Chain.



Blockchain Benefits

- ❖ BT will lead to a 15% to 50% decrease in the products' final cost:
 1. Due to the Disintermediation.
No need for middle trusted foundation, like Banks.
 2. Due to Paperwork reduction.
e.g Bills of lading, Commercial Invoices, Letters of Credit, Insurance Certificates etc.

Blockchain Benefits

- ❖ BT **eliminates** disputes, forgeries and **unnecessary Risks**.
- ❖ BT combined with **AI** can lead to:
 1. Finding the **best supply distribution channels**.
 2. **Reduction in wastes & GHG Emissions**.



Systemic Point Of View

Organic Systems vs EcoSystems



Centralized Networks

- ❖ **System** is the company and each department consists of a **Subsystem**.
- ❖ The employees, the Technological Equipment, the Data, the Funds and the Processes to convert Inflows to Outflows are parts of the **Internal Environment** of the Company as they interrelate.
- ❖ The clients, the suppliers, the Shipping Agencies, the Customs Offices, the Certifiers constitute **the External Environment of the System**.

VS

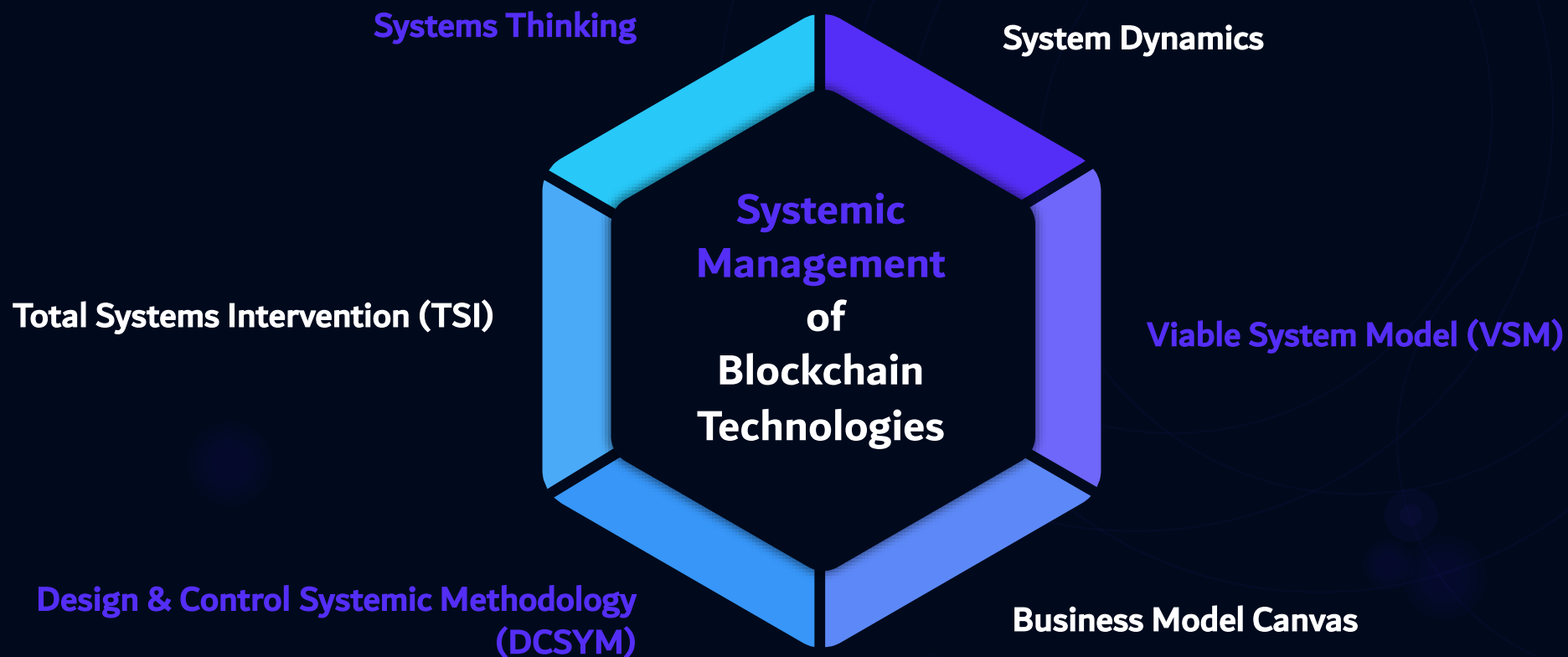


Decentralized Networks

- ❖ An **EcoSystem** (Sociotechnical System) combines different companies (Organic Systems) and a lot of technological equipment (Mechanical Systems).
- ❖ Systems Thinking tools allow us to map and explore dynamic complexity.
- ❖ Using Systemic Methodologies & Multimethodologies we can manage those Ecosystems.

Systemic Point Of View

Systemic Methodologies & Multimethodologies



New Generation of Managers

New Managers must be familiar with the languages of:

- IT Developers
- Data Analysts
- Lawyers &
- Economists





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