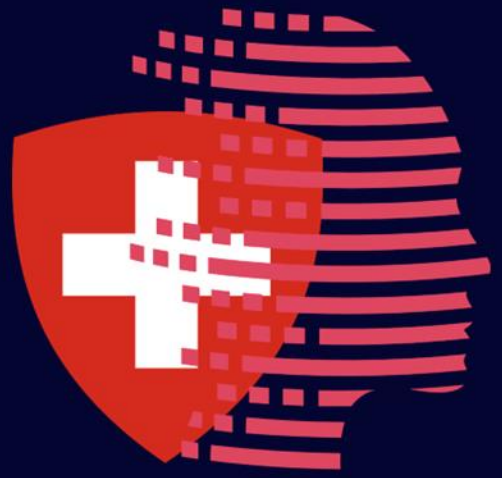


SWISS
BLOCKCHAIN
ACADEMY

Blockchain Basics

E-LEARNING

Foundation offers the basics of "Blockchain Mindset" to enable you to begin your journey into the digital economy.

PREVIEW

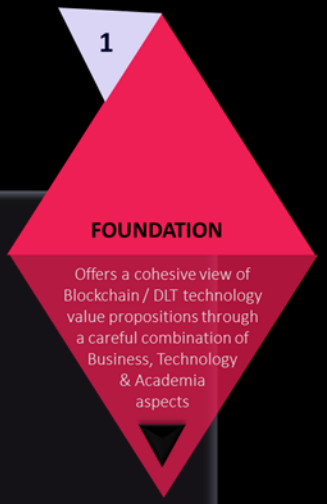
Total duration : 2.5 hours
Suitable for : Entry level

Gaining fundamental knowledge and experience is imperative to shaping your future in Digital era where the blockchain **Foundation level** training offers valuable awareness into blockchain technology, allowing you to explore the opportunities and benefits of this game-changing technology.

E-LEARNING MODULES:

1. DLT/Blockchain
2. Smart Contracts
3. Crypto Currencies
4. Decentralised Finance
5. Industry use case study

MODULE 1: BLOCKCHAIN/DLT



CHAPTER	TOPICS BREAKOUT	
A. INTRODUCTION	i) DLT	• Conceptual Model • Consensus • Functional Characteristics
B. FRAMEWORK COMPARISON	i) Public Protocols	• Ethereum / Neo / Stellar / EOS
	ii) Private Protocols	• Hyperledger / Corda / Ripple
	iii) Next Generation Protocols	• Hashgraph / ATROMG8
C. CRYPTOGRAPHY	i) Security, Privacy & Transparency	• Environments • Multi-Sig, Private/Public key/Faraday Cage

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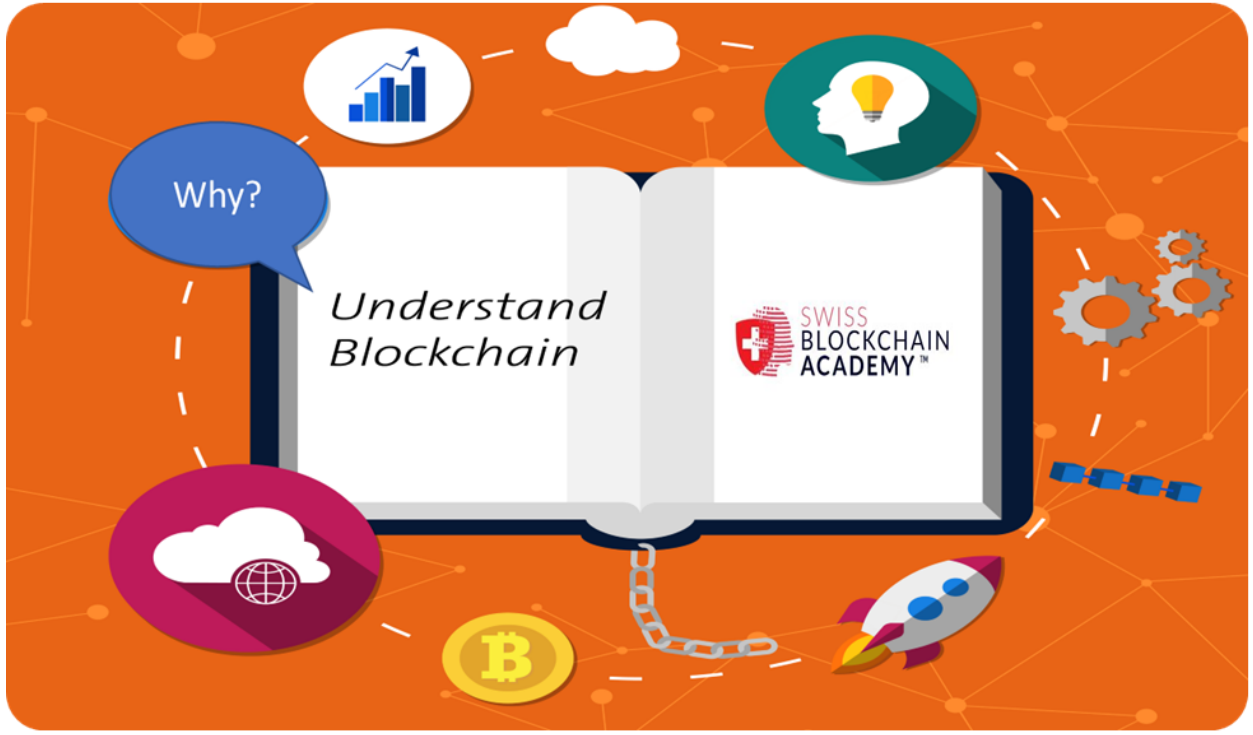
Course Overview – Module 1

YOUR JOURNEY BEGINS WITH UNDERSTANDING THE BUILDING BLOCKS OF BLOCKCHAIN TECHNOLOGY AND EXPLORE KEY CHARACTERISTICS THAT MAKES IT A GAME CHANGER IN FINANCE AND INDUSTRY



Conceptual Model Overview - DLT

Demonstration of key components such as conceptual models / architectural principals , consensus & functional characteristics

Blockchain Essentials

High-level comparison of public , private and hybrid chains with examples of various protocols designed for specific applications

Tokenization

Define tokenized assets and how new asset classes and securities are created and distributed to offer security, privacy & transparency

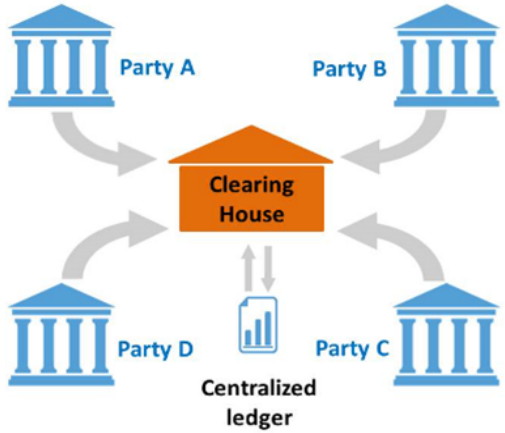
Digital Assets

Introduction to digital units of value with focus on crypto properties , economics and value transfers offering investment opportunities with high-risk reward dynamics

Use Case by Sector

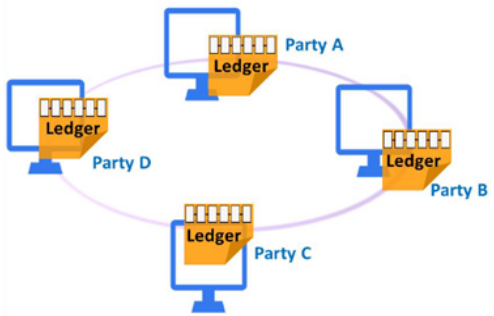
Covering the future of business , markets and money to conclude with a comprehensive view of real-world applications

Conceptual Model Overview- DLT



Centralized System

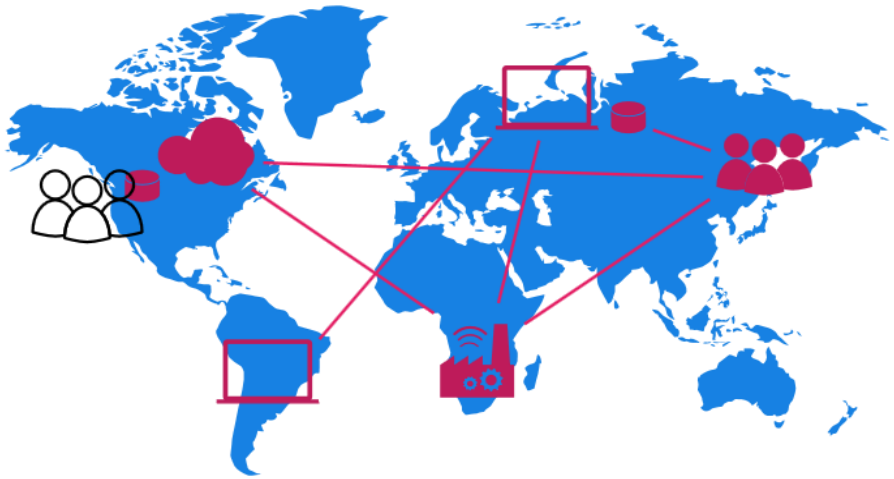
Centralized System depends on a central party such as a bank, data repository and / or a clearing house which act as intermediary between the parties to a transaction whether it's a financial transaction or a data base inquiry by a 3rd party wishing to retrieve information



Decentralized / Distributed System (DLT)

In contrast , a decentralized System has no dependency on a central party to act as an intermediary between the parties to a transact whilst allowing information to be transformed and shared by the active participants. Blockchain is a distributed ledger that gained a prevalent attention in many areas. Many industries have already implemented blockchain solutions for their application and services. It is important to understand the key components, functional characteristics, and architecture of blockchain to understand its impact and applicability to various applications

Consensus



Immutability

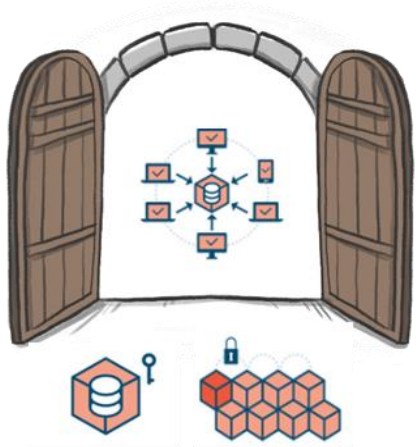
Blockchain protocols use consensus algorithms to ensure the data integrity of all data passed between many ledgers / wallets without the need for a trusted third-party . Being decentralized, a third-party cannot make any changes to the data in Blockchain as the consensus mechanism ensures an agree process is in place before execution an action such as changing the state of a data set

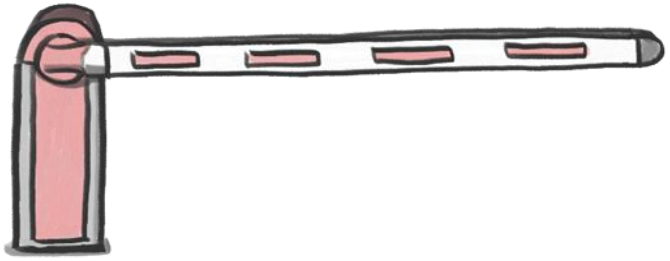
Agree process (consensus)

Driven by consensus where each user choses to agree on the proposed set of rules where any contention is solved by the common consensus through;

- Order of transactions (i.e., ledger updates)
- Validation of accuracy of transactions
- Completeness and in compliance with rules

Functional Characteristics





Permissionless

A permisionless network (e.g., Ethereum) allows the public to view and participate where data is published for the very purpose of openness / publicity with added features including :

- Anonymity – hidden counterparty to a transaction
- Distributed storage – with no single point of failure
- Opensource – anyone can contribute to develop

Permissioned

A permissioned network (e.g., Neo / Corda) offers a controlled environment through access to those who are approved to participate with terms and conditions of access thus ensuring :

- Security – federated measures to protect participants
- Privacy – special features to accommodate a mandate
- Control – closely monitored

"The mode of participation (permissionless or permissioned) has a profound impact on how consensus is reached."

Public

Public blockchains are public in nature where it is open for all to contribute and use & participate in transactions, and by default allowing anyone anywhere to join the common causes such as value transfer , contractual transactions and data sharing

Private

Private blockchains are limited in access by allowing access to prescribed users only. This features makes private blockchain ideal for Enterprise use cases where participants are part of a participating organization and / or qualified to participate

Hybrid

A hybrid blockchain network brings the best of both public and private by combining the features of both to come up with a flexible approach to adoption. As for comparison with know approaches, its simply put a Hybrid chain takes on a complimentary role to solve existing problems in real world applications where interoperability , flexibility and scalability is at the heart of architectural design.

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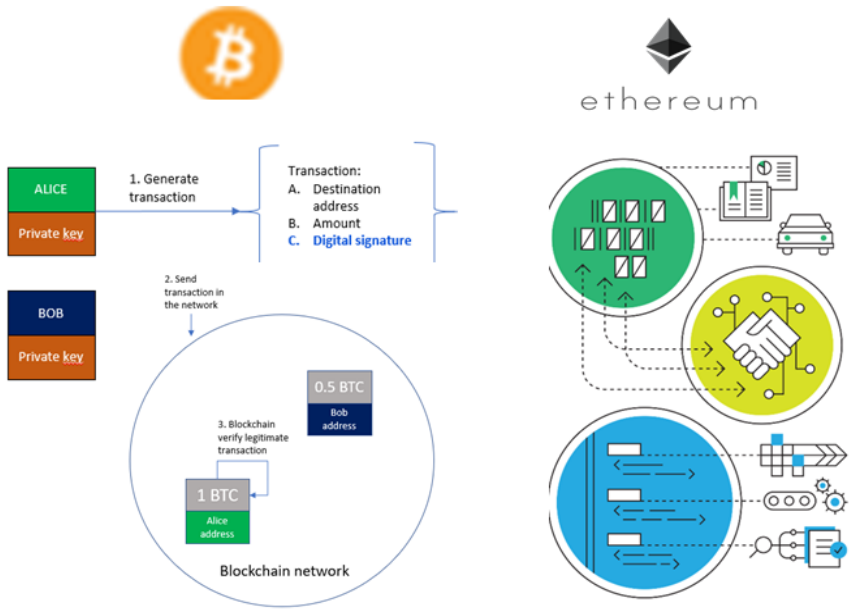
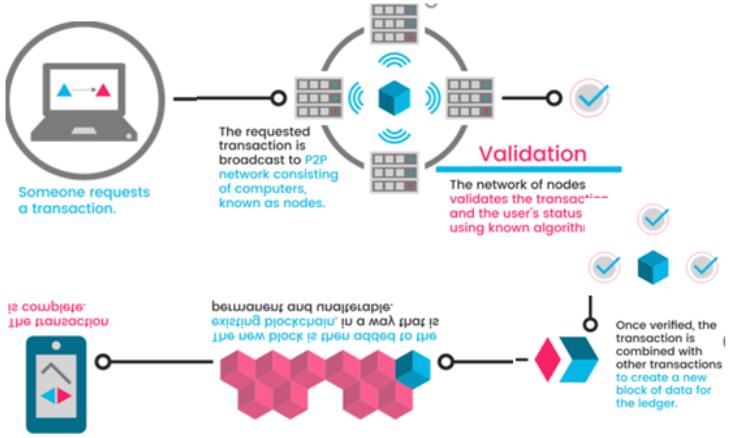
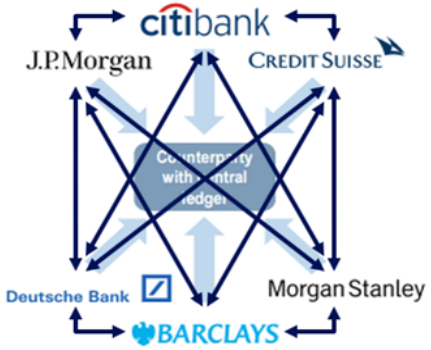
Protocol Comparisons



Bitcoin vs. Ethereum / Cardano

Bitcoin demonstrates the natural step towards the evolution of money using peer to peer (P2P) payment without the need for banks which act as intermediary using money as a medium, and Ethereum takes on the role of disintermediation further by enabling smart contracts & Decentralized apps (Dapps) to execute contracts thus allowing financial engineering to flourish. In contrast, Cardano takes on the caveats of both Bitcoin & Ethereum key features with its proof of stake consensus mechanism & programmable layers for developing and running smart contracts for Dapps





Hyperledger vs. Ripple / Corda

Hyperledger is designed with Enterprise Blockchain application in mind where industries are either disrupted or reimagined. Conversely, Ripple and Corda are focused on financial services sector with proof of concepts covering from Interbank transactions & settlement to financial products leveraging on DLT protocols for banks managed by the banks. Corda consortium represents Tier 1 Global Banks who are eager to capitalize on their market share of existing products and servicers to influence the DLT landscape

Proof of Work

Proof of Stake

Proof of Work

Proof of work algorithm simply allows validation of transaction into a block (verified data set) using a predefined set of rules where a network of nodes acting as miners run high powered processors to process a complex validation process known as «Hashcash» in Bitcoin mining and gain rewards for their effort. The transaction validation process is designed to be heavy workload to process in order to avoid any network attacks (I.e.. DoS attack) and ensures security. The first generation of public Blockchain protocols such as Bitcoin and Ethereum leverages Proof of Work to expand the ecosystem with incentives using the native coins/ tokens.

Proof of Stake

Proof of stake concept facilitates mining / validation of block by persons who holds significant stake in the network through owning most native coins thus the allocation of power to mine for those with substantial stake and avoid any attack by others. The second generation of Blockchain protocols (mostly private) have introduced the Proof of Stake concept with security and community in mind.

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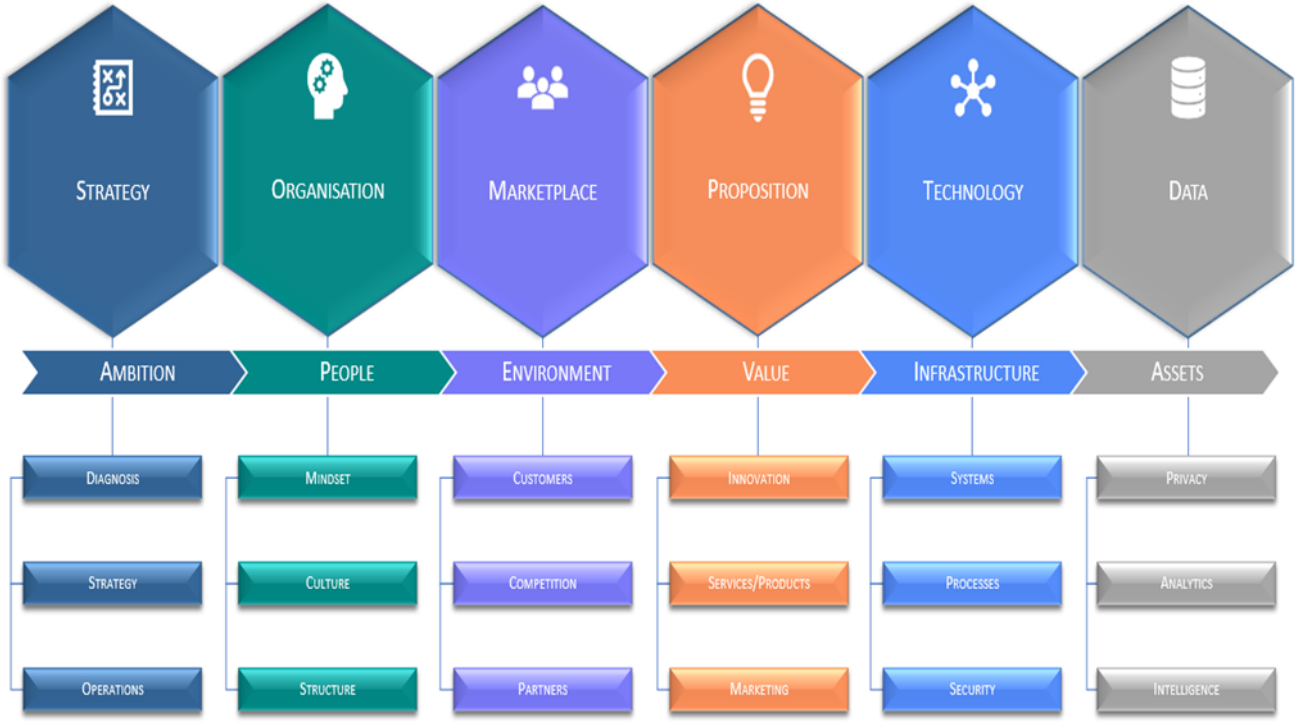
Tokenization



Tokenization involves developing a token strategy where the issuer offers a structure that derives its value from an underlying asset which can be either a tradable financial asset of any kind broadly categorized into debt , equity and /or derivatives of an asset backed offering with rights to revenue streams , dividend and/or voting as well as claims to IP , copyrights etc..

Value Creation

The issuer typically looking to offer the investor an attractive investment leveraging on a specific strategy of an organization aimed at investors who seek exposure to a particular sector , opportunity and often based on expected outcomes of an enterprise or an asset class

Liquidity

The market liquidity depends on the tradability , marketability and eligibility features and conditions in favor of the underlying investment and the token itself

Marketplace

Typically, a market maker would be involved to bring the token offering to a primary market with a consortium or high net worth individual investors with appetite for alternative investment categories. A secondary market would further extend the offering reach retail / qualified investors through an exchange.

Tokenized Assets

Assets

Equity

Debt

Tokenized Assets

Means creating a digital representative of the underlying asset class (e.g., income producing real estate /infrastructure , commodities, loans & other items of value) which drives the value of the token subject to terms and conditions. The asset token can be traded as a financial asset of any kind broadly categorized into Asset (backed) , Equity and Debt based financial security. In addition, offer participation rights and relative claims to an enterprise undertakings i.e., revenue share, divided and/or coupon payments.

Tokenized Equity

An Equity token is a promissory offering which grants equity shares (i.e., preferred / common equity and synthetic equity) with expected cash flows / earnings with no limited equity rights

Tokenized Debt

Tokenized debt includes Bonds (both regular & covetable) deriving its value from the Net Present Value (NPV) based of expected returns and underlying issuer credit worthiness. A SME capital raise can be structured through a token offering where issuer can offer risk reward on declining basis with reduced exposure to investor over time.

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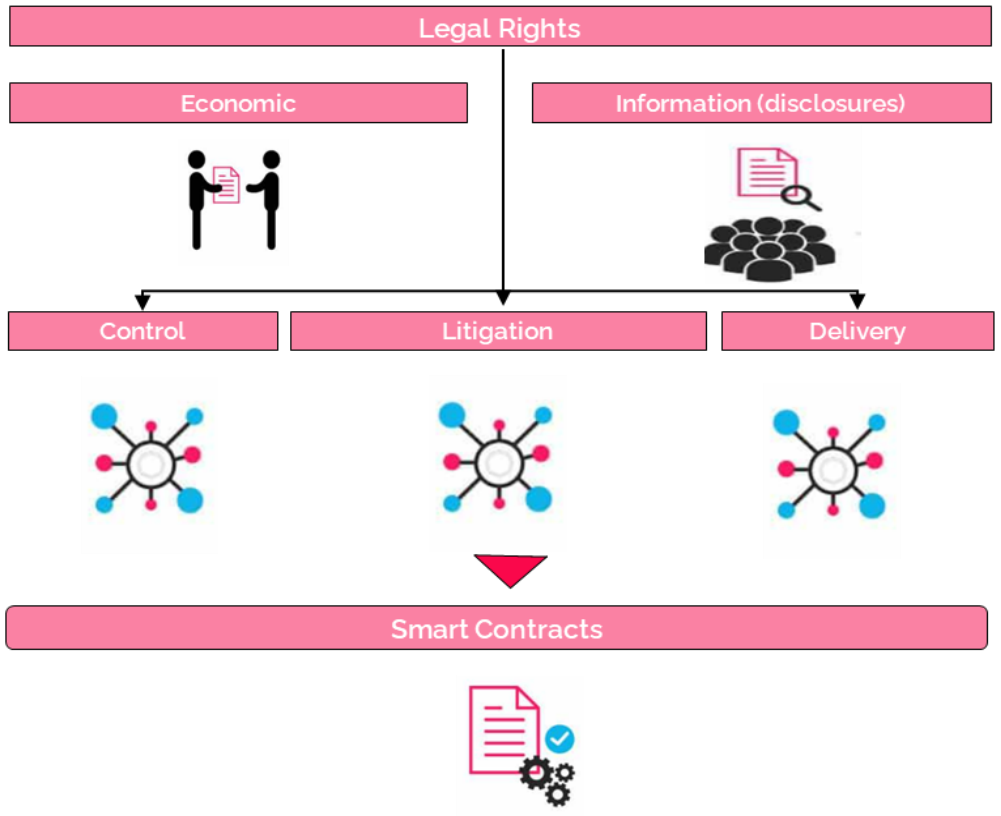
Value Proposition



Defining Digital Assets

A digital asset is value unit created and / or leveraged on a traditional asset as a financial instrument with varying risk reward dynamics.

Economic Value

Initiation of a transaction serves as an input for economic value creation where shared agreement and information are vital for commercial purposes

Ownership

Traditional financial assets with the exception of bearer instruments requires a third-party custodian to retain and assign ownership through pooling & net asset settlement process, and with blockchain technology it's streamlined by self custody by an owner of any digital asset using private keys for ownership & transfers

Rights

Offering relative rights towards a natural person or counterparty includes participation rights based on Net Present Values (NPV) of expected returns. Voting rights are additional rights granting certain voting rights to token holders

Claim

A represents what rights a token offers to its owner and forms of contractual claims based on investment terms and conditions

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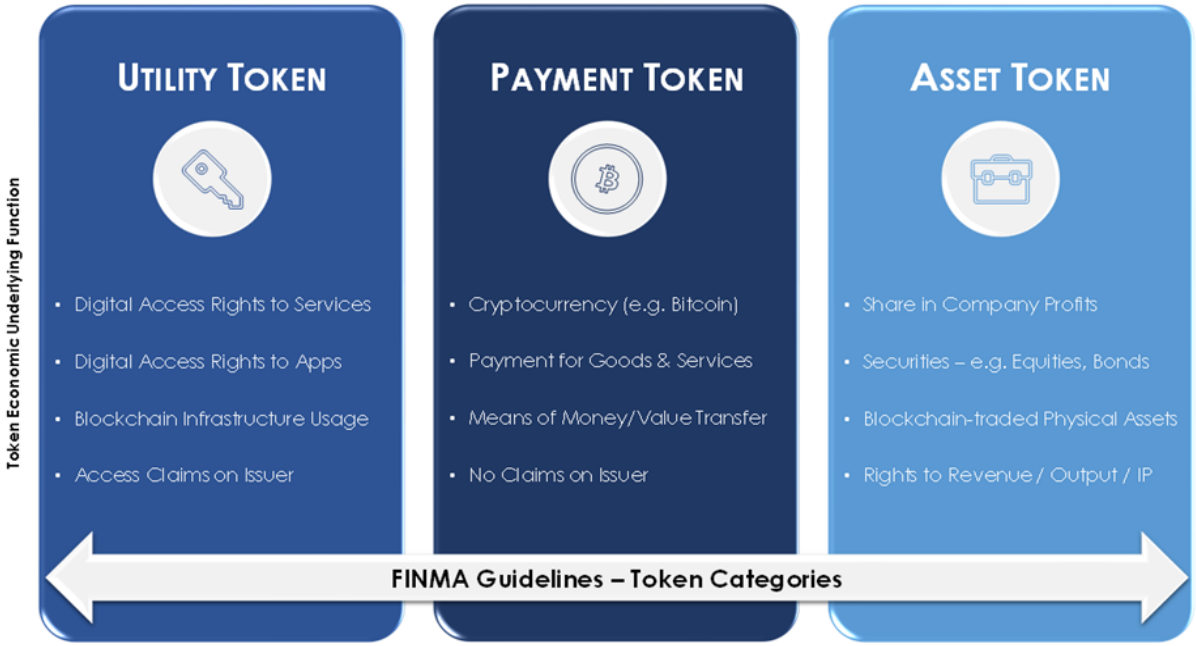
Digital Assets



Filecoin litecoin Siafunds

Defining Economic Functions

Distributed Ledger Technology or more specifically Blockchain technology is increasingly applied to solve problems faced with the legacy financial systems where transactions are carried out by intermediaries who reform specific economic functions to facilitate activities covering the value chain of financial transactions

Utility

As the most widespread prepaid tokens based on future outcomes and/or access to application /services

Payment

Intended for store of value and medium of exchange for the purpose of peer-to-peer transactions where no intermediaries are needed to act as trust anchor . I.e.. Bank account transfers

Asset

Derivatives of existing asset classes with physical underlying , equity shares , rights to earning stream or dividends

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Crypto Properties

Crypto properties helps to define the 3 key categories of coins / tokens symbolizing value within a network /protocol , an underlying or through claims to value unit in the context of functional criteria

Utility Tokens

Currencies

There are over 1658 digital assets currently being traded on the market.

Asset Tokens

Tokenized assets typically include Funds, Equity , Debt & other traditional type of securities

Representative Tokens

Tokens which represents a claim and relative rights to an underlying asset

Native

Acting as a medium of exchange and store of value created and used within a protocol network representative of the value generated and transferred across a range of applications

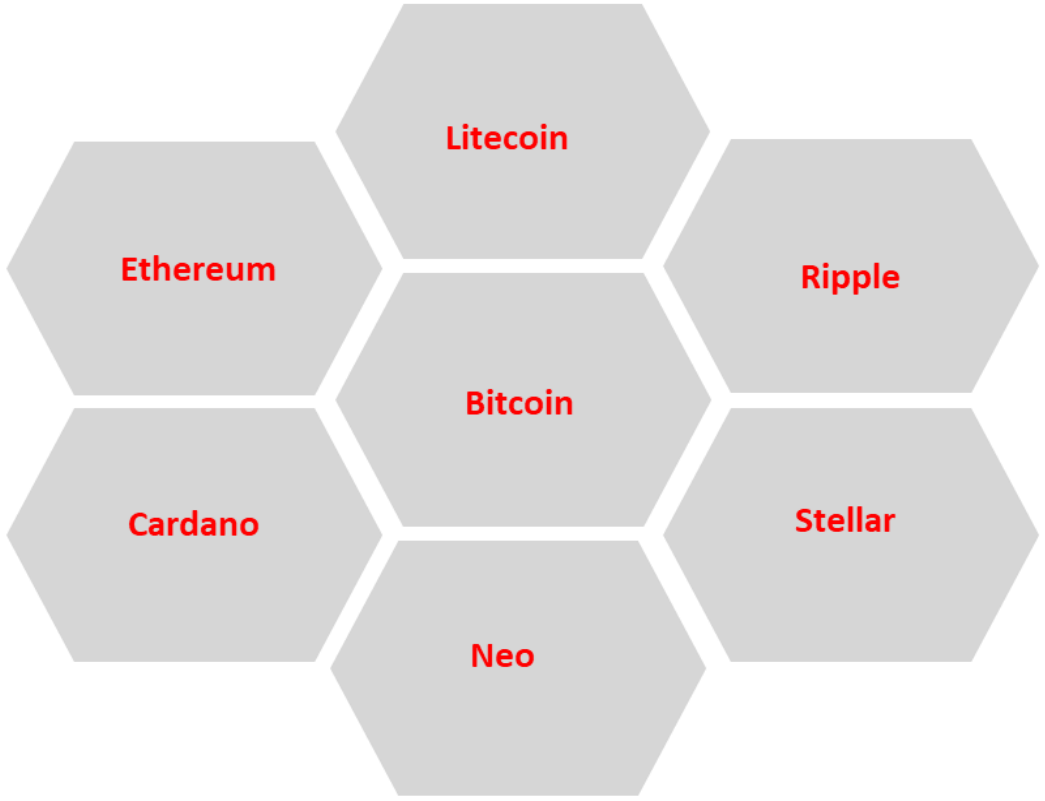
Counterparty

A digitalized version of an existing asset class or a counterparty claim against the issuer and based on participation in an enterprise are classified as asset tokens which fall under securities category of financial instruments in most cases with specific terms of issuance, exchange and settlement.

Ownership

A Traditional financial assets with the exception of bearer instruments requiring 3rd party custodians to retain and assign ownership due to pooling of assets & net asset settlement, and with blockchain technology the easy extraction by an owner of any digital asset to their private keys eliminates these practices and all easy verification for ownership & asset transfers

Crypto Currency Landscape



Bitcoin

As the first and most popular decentralized peer-to-peer payment system Bitcoin stands as the benchmark for value store

Litecoin

A fork of the Bitcoin core client. Unlike Bitcoin, Litecoin aims to process a block every 2.5 minutes using a script algorithm.

Ripple

Developing solutions for the financial sector speeding up the cross-border payment and lowering transaction costs. Payments are processed in a matter of seconds

Stellar

Nonprofit protocol that offering an easily launch of new tokens in matter of hours with low confirmation times and high transaction processing per second

Neo

Known as the “Chinese Ethereum”, Neo project aims to create a “smart economy” providing digital identity, digital assets and smart contracts

Cardano

A blockchain platform that provides a programmable blockchain and smart contracts for decentralized app development

Ethereum

Decentralized online services based on Blockchain platform working on the basis of smart contracts with the possibility to deploy decentralized apps.

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Crypto Wallets

Cold

Hot

Definition

A crypto wallet is a software program that stores a set of private and public keys for authentication and security to grant access to interact with a specific Blockchain protocol

Private Key

A randomly generated unique set of characters with a single function to safeguard access to the wallet hence self custody and safe keeping without the need for a third party such as a bank. A loss of private key is an absolute loss of the underlying belongings (asset / funds etc.).

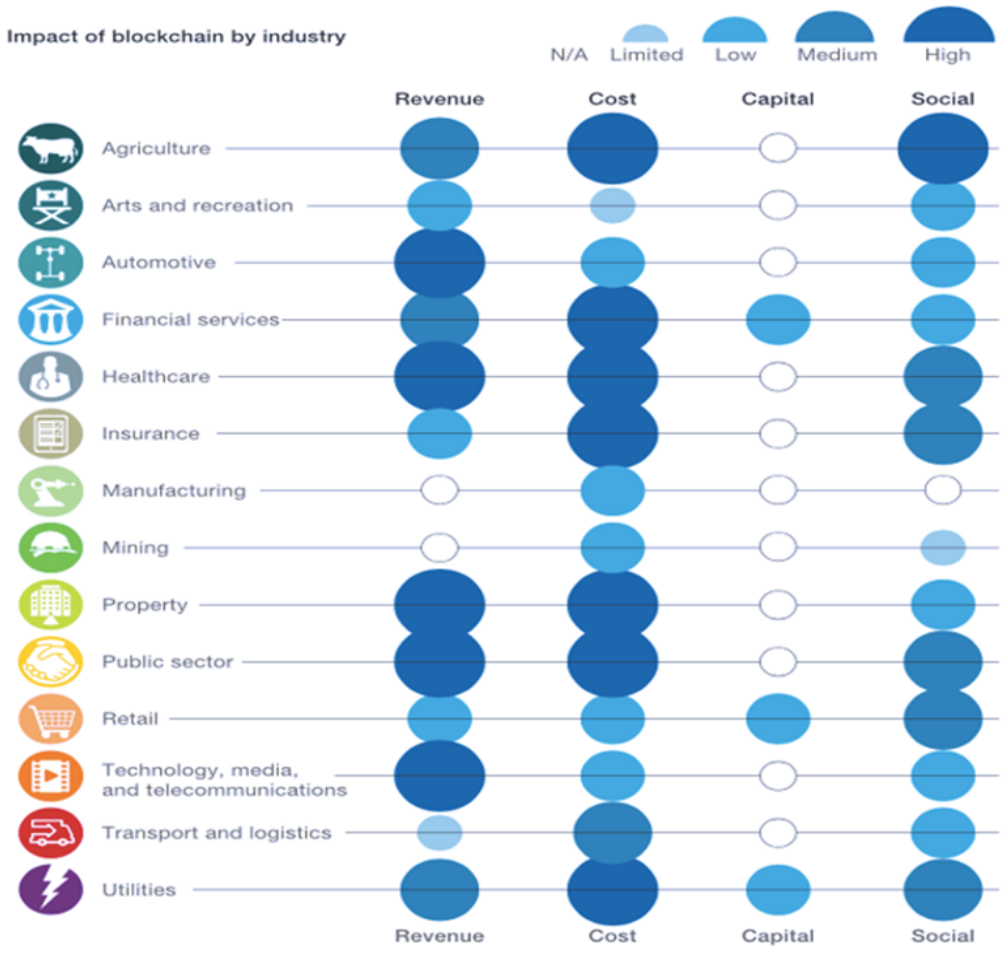
Public Key

An address generated to identify the recipient wallet for transfer of assets / funds where the destination address is used to transact between willing participants on a peer-to-peer basis

Storage Options

The wallets can be stored in a number of ways depending on the needs of the holder. A cold storage includes paper printout and offline hardware and in contrast a hot storage if an online option using a device connected to internet.

Use Case overview by Sector



Finance

The pain points in Finance and Banking themselves validate the need for the application of DLT. However, the adoption is slow even though existing infrastructure & methods are fundamentally disrupted

Healthcare

As a trust enabler, Blockchain application conveys traceability and authentication of medical supplies and treatments as well as resource management

Enterprise

DLT concepts plays a key role in a multitude of Enterprise change cases where firms seek to maximize efficiency by reducing processing time & associated risks

Retail

Automation of end-to-end processes including an integration into IoT for connectivity is key to enabling data driven customer experience

Supply chain

Blockchain mostly brings much needed transparency for operational information shared between actors and improves end to end processes for operational excellence

Transport & Logistics

Track and trace of all things in commercial transportation can improve transparency through seamless communication between operators , support functions and users

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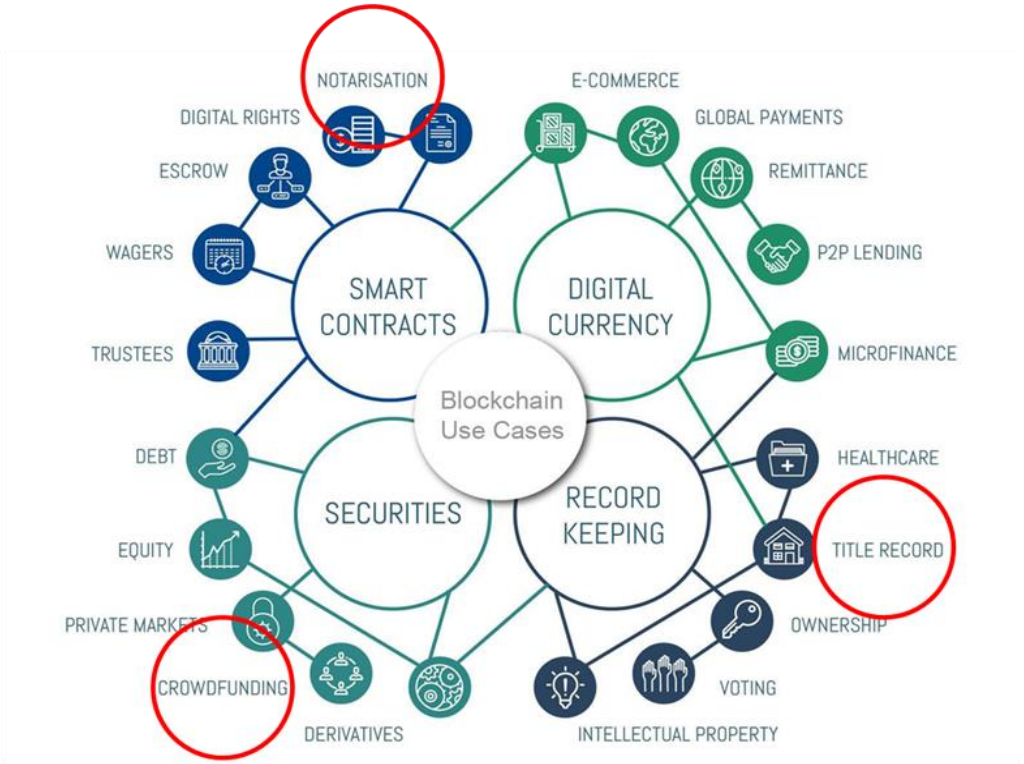
Future of Business , Money and Transactions



Role of Smart Contracts

Enabling straight through processing of data for Execution and management of contractual obligations according to terms and condition of sale , provision of services and settlement of transactions

Central Bank Digital Currency (CBDC)

A permissioned network only allowing access to those who are approved to participate under predefined terms and conditions covering access , usage and control

Decentralized Finance (Defi)

Offer Lending , investing and exchange of assets through unprecedented approaches by creating value using decentralized portals offering multitude of exposures to a range of opportunities based on Digital assets and alternative investment scenarios

Real-time Data Driven Applications

Blockchain infrastructure addressing the importance of distributed computing components enabling decentralized Apps to run and utilize the concept of shared layered infrastructure with much needed load time to integrate IoT and AI applications.

BLOCKCHAIN MINDSET - FOUNDATION

Building an informed and engaged community

THANK YOU