Basic Fundamentals of Blockchain

Unleash the power of Blockchain for your company !

Summary

1. Blockchain, Evolution or Revolution ?...
2. Blockchain...What for ?
3. The emergence of a new data exchange model
4. Basic principles of Blockchain
5. A unique model of producing and extracting data
6. A securization process shared between the network members
7. Data sharing and saving based on a distributed model
8. Challenges surrounding the development of the blockchain infrastructure

1. Blockchain: Evolution or Revolution ?

At first, a technological revolution:

- implying a disruption in the chain of traditional players,
- resulting in a revolutionary data exchange model…

…then, the **logical and expected evolution** of a dematerialised data environment.

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2. Blockchain…What for ?

Virtual Currency

Medical data exchange and use

Credit scoring

Notarial agreements

Financial assets purchase and sale

3. The emergence of a new data exchange model ?

In the context of a total data, goods and services dematerialisation, **Blockchain** introduces the emergence of a whole new infrastructure leading to:

- The speed up of data circulation
- The automation of any business process
- The securisation of business and payment exchanges
- The reduction of the cost of moving data through complex and proprietary networks

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4. Basic Principles of Blockchain (1)

Blockchain is a new model of shared data exchange based on the following principles:

01 A unique model of producing and extracting data

02 A validation process through a unique code

03 Validated Data shared and saved on a distributed way

4. Basic Principles of Blockchain (2)

Let's take a first example!

=> imagine blockchain as the digital equivalent of a physical ledger in which you register when spending a few nights in a hotel:

- You put your name, date of arrival on the ledger,
- Your name and the information are recorded on a page of the ledger with a precise number,
- At the end of the day, the ledger is sealed and a copy of it distributed to all the hotel's managers and employees,
- The day you quit the hotel, you write your name and the departure date on the ledger,
- Again, Your name and the information are recorded on another page of the ledger with another precise number,
- Again, At the end of the day, the ledger is sealed and a copy of it distributed to each manager or employee,
- A few weeks later, if someone want to know the dates where you stay in the hotel, the ledger provides the information with the indication of the page where are recorded the information.
- As the ledger is sealed and shared among all the hotel's managers and employees, the information won't be manipulated as each one received a daily copy of the ledger and the accuracy of the information easily checked.

5. A unique model of producing and extracting data

Second example / Bitcoin which is linked to Blockchain as its underlying technology : producing a bitcoin, the famous crypto-currency, is based on a particular algorithm commonly designated as **'Mining'**. Mining means calculating the outcome of an equation in order the algorithm generates one unity of the currency implemented in the blockchain ecosystem.

Third example / which is a comparison between physical Gold mining and numerical Bitcoin mining.

GOLD MINING	DATA MINING
Digging a mountain	Solving calculations in an algo and producing a bloc
Storing discovered Gold into a facility	Sharing and storing extracted data bloc into a network
Certifying the extracted Gold with an official stamp	Validating data blocs through updating of the blockchain

6. A securization process shared between the network members

After the algo has been solved by miner :

- the extracted data block is considered validated
- the extracted data block has a unique code
- the data block is sent to all the nodes with its unique code

7. Data sharing and saving based on a distributed model

After the data blocks have been sent to the nodes :

- the blockchain ledger is updated using this unique code corresponding to the new block data
- the new block data is now validated inside the blockchain with its unique code

8. 3 Challenges surrounding the development of the blockchain infrastructure

Security

lack of protection for individual address keys leading to a huge theft of cryptocurrencies

Energy consumption

mining and validation steps require a huge amount of power to process a single block

Interoperability

no standardization prevent different blockchains to efficiently communicate with each other

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Thank You

Thank you for exploring the fundamentals of Blockchain.

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