

A close-up photograph of a person's hands holding a silver smartphone. The person's fingernails are painted a vibrant pink. The background is softly blurred, showing a laptop keyboard and a wooden desk. A large, semi-transparent blue rectangle with a wavy, textured pattern is overlaid on the center of the image. Inside this rectangle, the title 'Blockchain in context' is written in a bold, white, sans-serif font. Below the title, the name 'Lukáš Hatala, DXC' is written in a smaller, white, sans-serif font.

# Blockchain in context

Lukáš Hatala, DXC

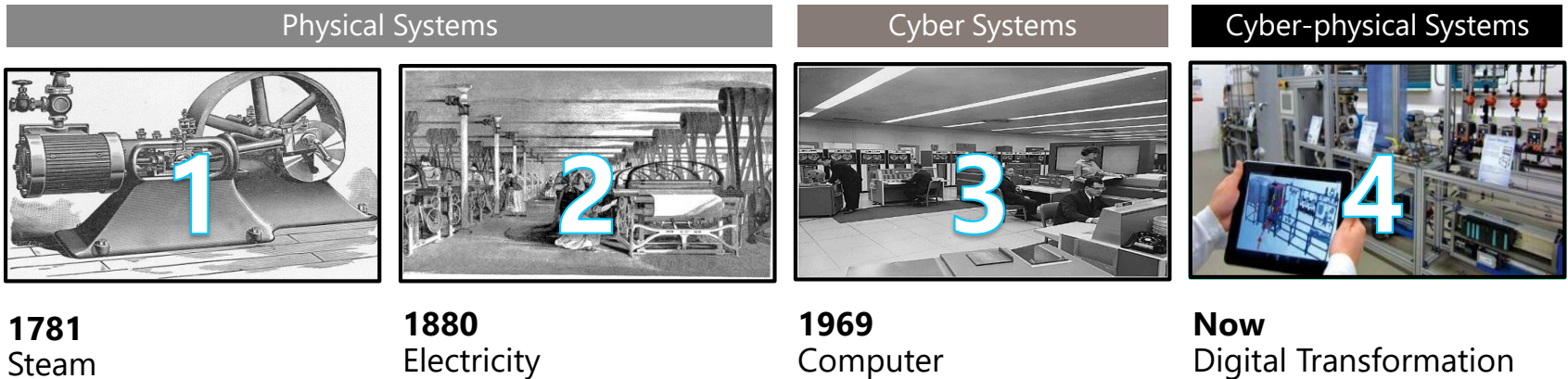
# Digital Transformation?

**1<sup>st</sup> IR** – Automation of muscle man power via steam machine.

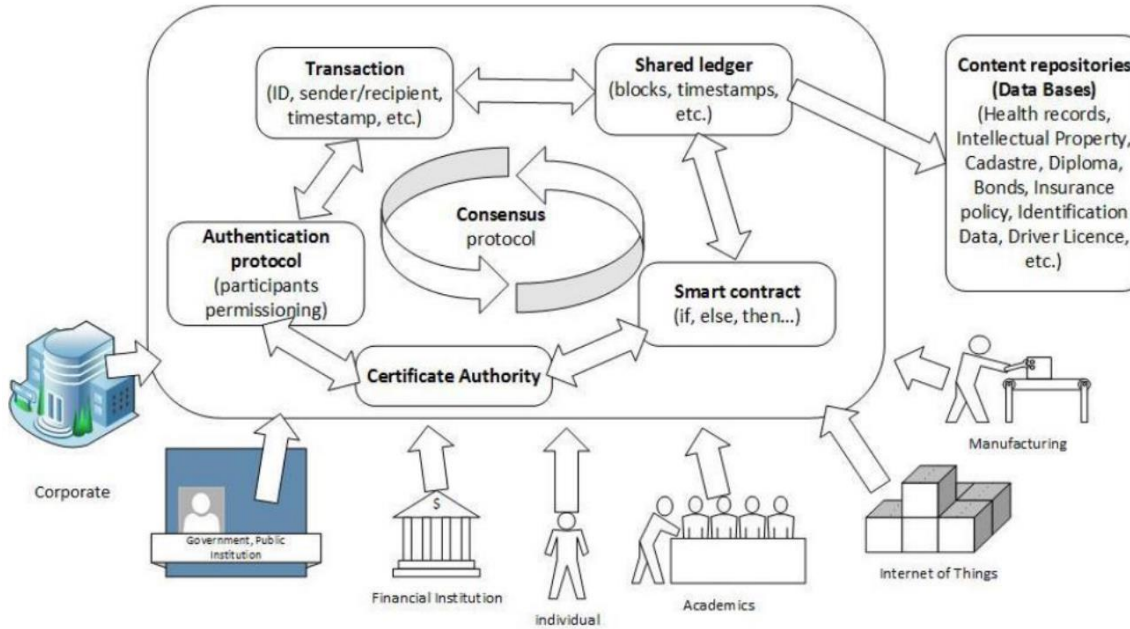
**2<sup>nd</sup> ER** – Electrification enabled sustainable expansion of man power automation further.

**3<sup>rd</sup> BR** – Automation of brain mind power via computers.

**4<sup>th</sup> DT** – Digital Transformation is mainly about synergies between mind and muscle and enabling ecosystem king of system behavior.



# Trend or Technology?

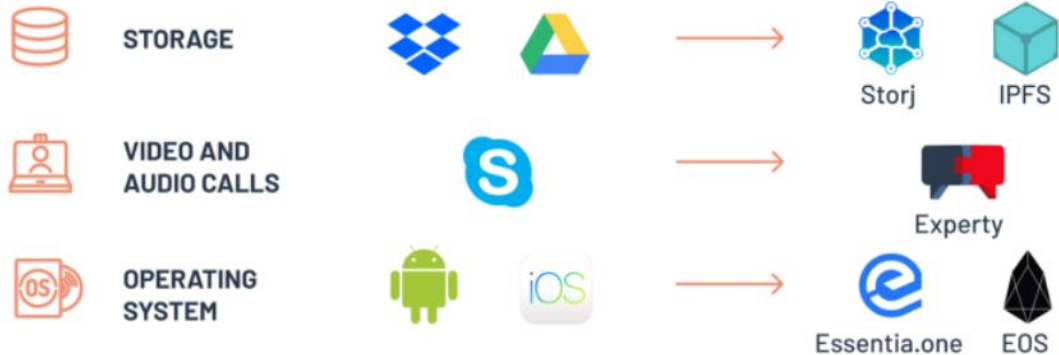


| Database       | Blockchain     |
|----------------|----------------|
| Value Capture  | Value Transfer |
| BPMN           | Smart Contract |
| Record Storage | Record Keeping |

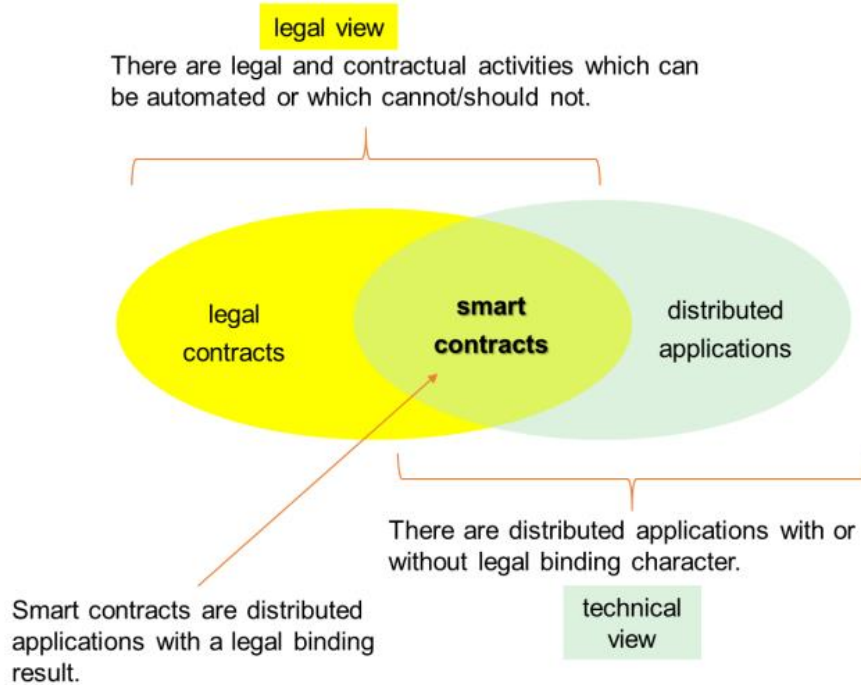
| Consensus protocol | Decentralized Control | Low Latency | Flexible Trust | Asymptotic Security |
|--------------------|-----------------------|-------------|----------------|---------------------|
| proof of work      | ★                     |             |                |                     |
| proof of stake     | ★                     | ★           |                | ★                   |
| byzantine          |                       | ★           | ★              | ★                   |
| tendermint (BFT)   | ★                     | ★           |                | ★                   |
| stellar (FBA)      | ★                     | ★           | ★              | ★                   |

# What technology consist of?

| BC element           | Technically                 | Related Standards  |
|----------------------|-----------------------------|--|
| Operations           |                             | ISO/IEC 27001, BSI 100   |
| Implementation       |                             | ISO/IEC 15408  |
| Privacy Mechanism    |                             | ISO/IEC 29115, 27017, 27018, 27552, JTC SC 32                        |
| Application protocol | Smart Contracts, Dapps, ... | Now Decoupled from BC via Smart Contracts but ???                    |
| Blockchain protocol  | Consensus Protocol          | In progress (ISO/IEC TC 307)   |
| Cryptography         | Hash function               | ISO/IEC 10118, 14888, 18014, 29128, 9798, 13888, 18031, 20009, 20008 |



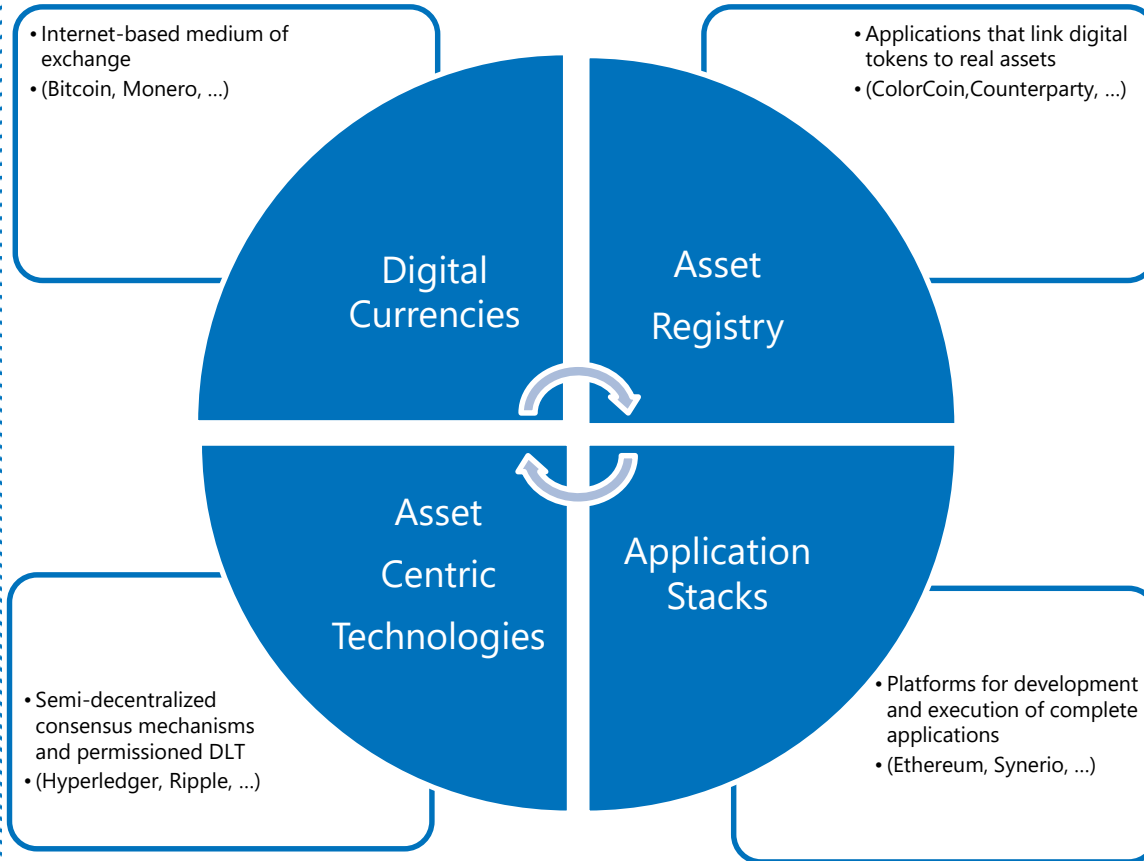
# What is Smart Contract?



**Technical view:**  
A smart contract is a distributed application running on and distributed with the distributed ledger. Represents more the process of agreeing on an outcome than its legal status. Its outcome may or may not be legally binding.”

**Legal view:**  
The legal character of a smart contract is that what a judge decides to be. So if a smart contract should ever be legally binding, it is better to apply legal standards to smart contracts.

# BC & DLT implementation types



## Horizontally (application type):

- Exchange of digital assets and currencies
- Notarization of transactions
- Traceability of products, of events
- Storage of digital proof
- Automatization of processes
- Intellectual property management

## Vertically (Industry applications):

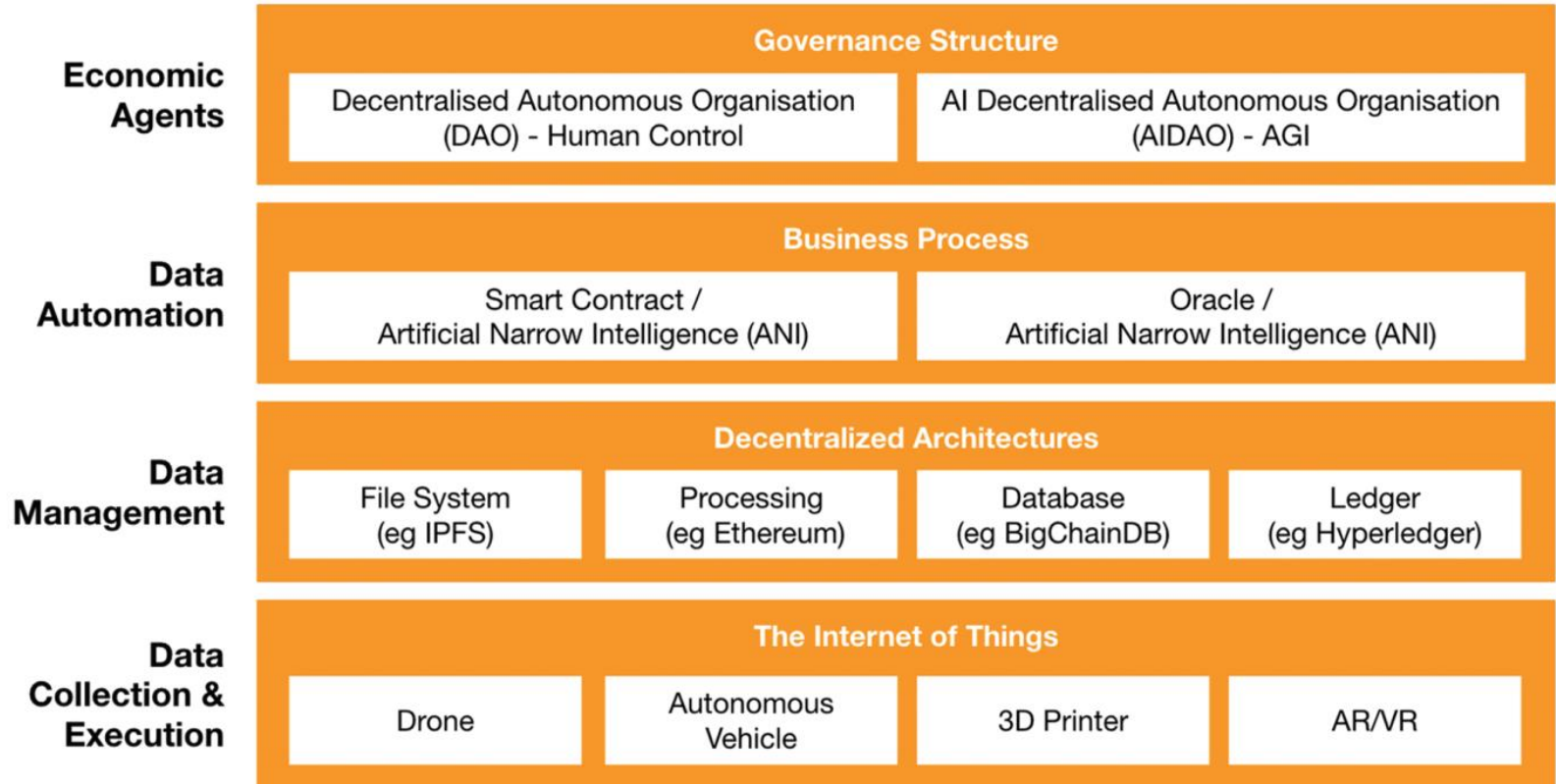
- Financial services (banking, insurances)
- Government and public services
- Manufacturing
- Retail
- Utilities
- Culture, media and entertainment

# BC & DLT deployment options

\*Modified from IBM release document

|                                | Public  | Consortium  | Private          |
|--------------------------------|---|---|------------------|
| Governance                     | -   | Several parties   | One single party |
| Identity of users              | Free  | Permissioned  |                  |
|                                | Not specified, may contain malicious members              | Specified, composed of reliable members                                       |                  |
| Consensus algorithm            | PoW etc.  | PBFT etc.<br>(Practical Byzantine Fault Tolerant)                             |                  |
|                                | Multi-block confirmation<br>Large electricity consumption | Immediate block confirmation<br>Simple / Fast / Small electricity consumption |                  |
| Processing time of transaction | Long (e.g. 10 min)  | Short (e.g. a few sec)  |                  |
| Use case                       | Virtual currency etc.                                     | Business network as interbank transfer, stock exchange etc.                   |                  |
| Example                        | Bitcoin, Ethereum etc.                                    | Ripple, Hyperledger Fabric etc.   |                  |

# DAO scifi or reality?





# Blockchain Standards and Regulations

## Standardization Organizations:

ISO *TC 307 Blockchain and electronic distributed ledger technologies*

CEN -||-

IEC -||-

ETSI *Industry Specification Group on 'Identity and access management for Networks and Services'*

3GPP *5G infrastructure hosted Dapps*

OneM2M

## EU Regulations and Directives:

eIDAS - electronic IDentification, Authentication and trust Services

AML4D - Anti Money Laundering Directive

GDPR - General Data Protection Regulation

ePrivacy - Privacy and Electronic Communications Directive

NIS - Network and Information Security