Introduction to **blockchain**

Distributed Ledger Technology

Concepts and Opportunities

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About **Trust** and **Risk**

- Our **trust values** have changed:
  - Government and Financial Institutions
  - Technology - The internet, our data, our identity
  - Our interactions with strangers (AirBnb, Uber)

- Lack of **trust** leads to **risk** based evaluations:
  - Is my data safe, secure, reliable, timely and accurate?
  - Where is my identity stored? How is it being used? Who can access it?
  - Which 3rd party can I use to ensure trust?
  - How do I know my business partners are doing the right thing?

The Diamond story

History of **blockchain**

- Cryptographically secured chain of blocks was described in 1991
- The first **blockchain** was conceptualised in 2008
  - Implemented in 2009 as a core component of the digital currency **Bitcoin**
  - Designed by Satoshi Nakamoto
- By 2014, Ethereum introduced Smart Contract: **Blockchain**-based programmes that can be partially or fully executed or enforced without human interaction
- Yet, many challenges are yet to be overcome
  - Legal, governance, technical, performance, tooling

"Blockchain is to Business what the Internet was to Communication"

"Blockchain is the court of law of the Internet"

The **blockchain** promise

- **Blockchain** concepts:
  - Cryptography - Secure communication in the presence of adversaries
  - Distributed ledger – Every node has a complete copy of the entire ledger
  - Peer to peer network – no central point of failure
  - Tamper-proof storage – Chain of blocks
  - Permissioned access – Controls who can do and see what
- **Blockchain** promises:
  - Immutable ledger – high quality data and process integrity
  - Consensus driven approach – a majority of nodes must agree
  - Trust-less consortium – Trusted technology
  - Ecosystem simplification – Faster & cheaper transactions with no 3rd party

Blockchain flow

1. A Block is constituted by several "pending" transactions broadcasted to the global blockchain network.

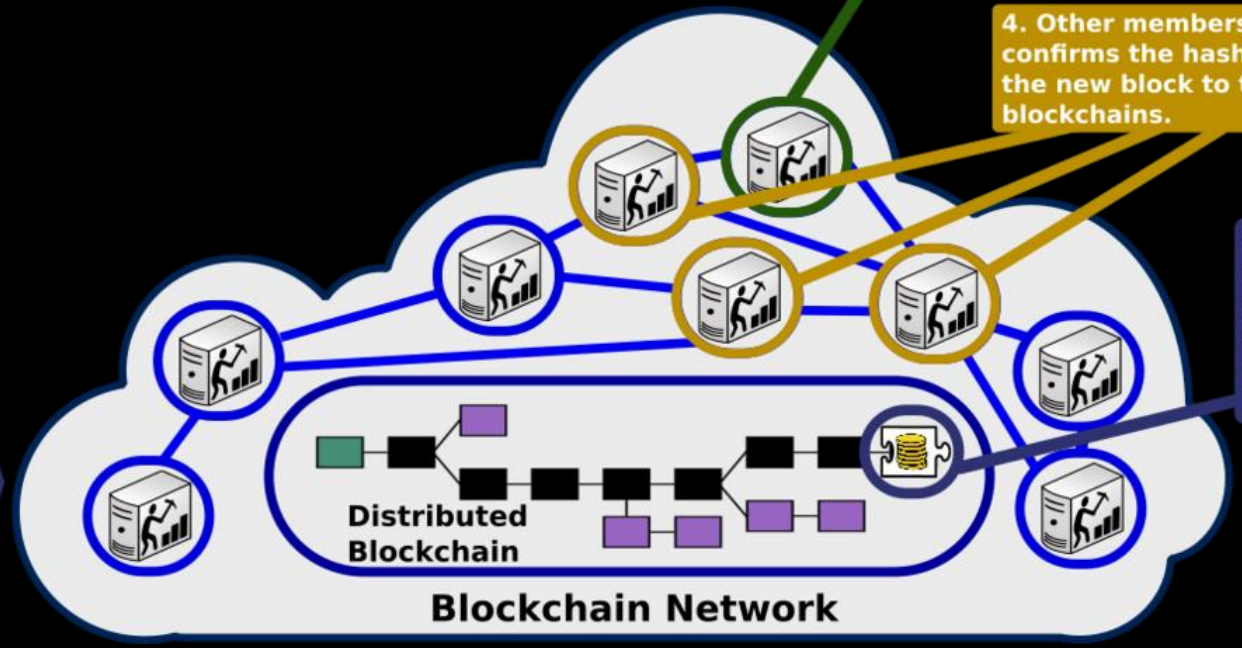
Every 10 minutes (or so) specialized computers - called "miners" - collect a few hundred transactions and combine them in a block

2. Miners will now process the new block in order to reach a "consensus" on what the "new" blockchain should look like.
At this stage, all miners start to work on solving the "Proof of Work" problem.

3. Let's imagine that this miner is the winner of the game, he solved the "Proof of Work" problem, i.e. he has been the first one to be able to find a hash value for the new block being below a certain treshold.
This proof or work is in its turn diffused to the network for acceptance by every member.

4. Other members validate and confirms the hash before adding the new block to their copy of the blockchains.

5. When a majority of miners have added the block to their own copy of the blockchain, the block is validated and considered definitive.
All the transactions in it have been validated and stored in the blockchain



Common **use cases**

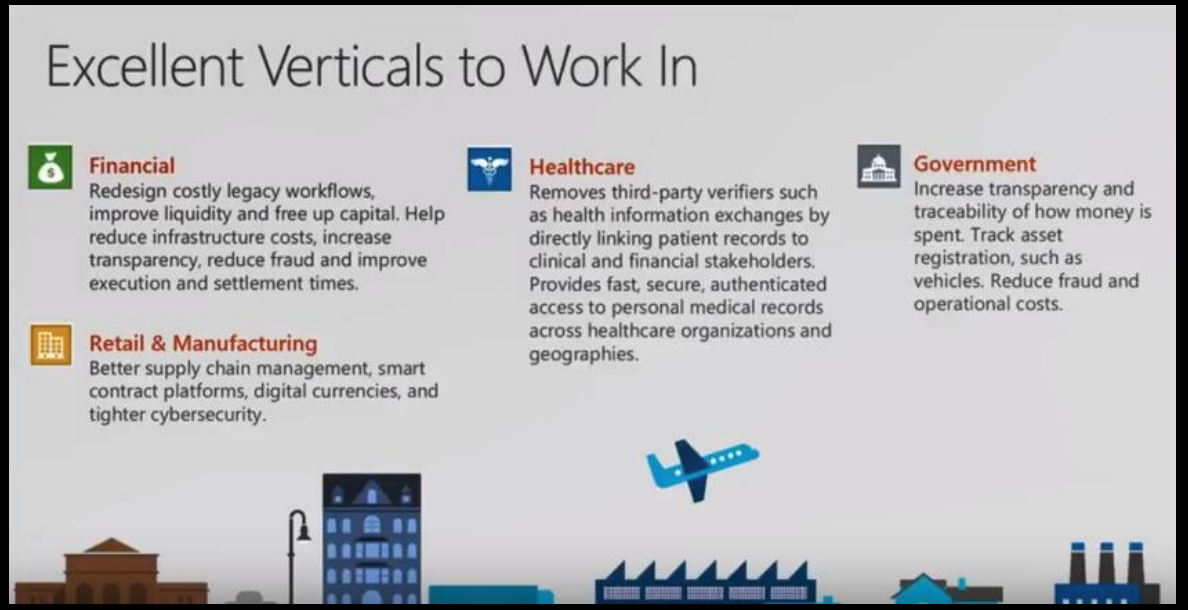
- **Blockchain** is a Distributed Ledger Technology
  - It's all about **transactions**
- Supply chain and contract management
- Voting – the "double spend" problem
- Identity management
  - Confidential patient records – Official documents – Public identity
- Alternative currencies
  - A growing list of digital / crypto currencies already available
- IoT for automatic trigger to smart contracts

- The **ICO phenomenon** for simplified funding

Opportunities

When should you to consider blockchain? When…

- You do not trust other parties
- Transaction costs are too high
- You want to exchange digital assets / digital value tokens
- You need to control and protect your identity / intellectual property
- You need governance through consensus

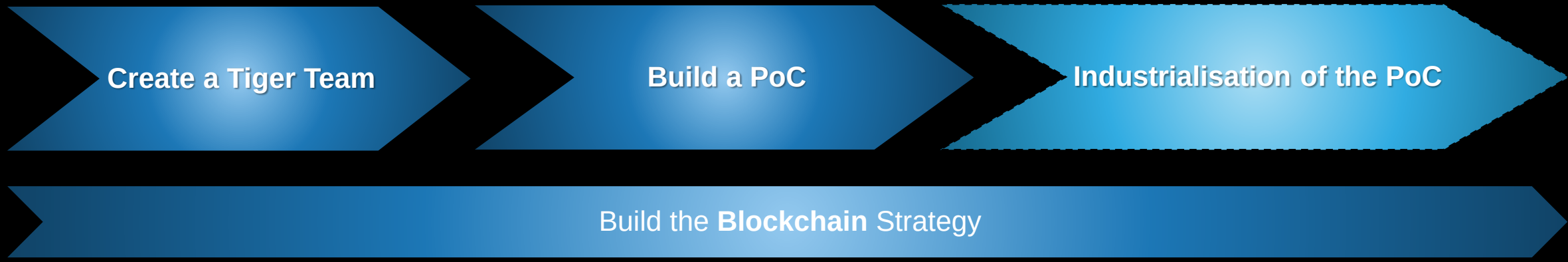


Recommended **approach**

- ***F.I.T.S.*** model review
- Objective: Business case and high level strategy

- Build the PoC and evaluate
- Objective: PoC outcomes and detailed strategy

- Fine tune the PoC and deployment
- Objective: Go live



Develop your **blockchain** strategy for the next 2/3 years

Team of **blockchain** specialists
(Strategy, Technology, Governance & Legal)

Any **questions**?

According to a recent survey conducted by IBM and the Economic Intelligence Unit, government interest in **blockchain** is high:

- 9 in 10 government organizations plan to invest in **blockchain** for use in financial transaction management, asset management, contract management and regulatory compliance by 2018
- 7 in 10 government executives predict **blockchain** will significantly disrupt the area of contract management
- 14 percent of government organizations expect to have **blockchains** in production and at scale in 2017

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References

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