What is the Blockchain and Why is it So Important?

Published on September 5, 2016

Mark van Rijmenam | Follow
Founder Datafloq | Big Data Strategist | International Keyno...

👍 78   💬 3   ↪ 22

Blockchain is growing in importance. Increasingly organisations have to explore what this revolutionary technology will mean for their business. Marc Andreessen from the well-known VC firm Andreessen Horowitz calls it as big an invention as the internet. Last year, in my Big Data Trends prediction for 2016, I already foresaw that 2016 would become the year of the Blockchain and now also Gartner has included in their Hype Cycle for Emerging Technologies.

Many organisations are already exploring the possibilities of the Blockchain, although primarily still in the Financial Services industry. The R3 Partnership is a consortium of 45 of the biggest financial institutions, investigating what the Blockchain means for them. Next to the R3 consortium, four of the biggest global banks, led by Swiss bank UBS, have developed a "Utility Settlement Coin" (USC), which is the digital counterpart of each of the major currencies backed by central banks. Their objective is to develop a settlement system that processes transactions in (near) real-time instead of days. A third example is Australia Post, who have released plans for developing a blockchain-based e-voting system for the state of Victoria.

The possibilities of the Blockchain are enormous and it seems that almost any industry that deals with some sort of transaction, which would mean any industry, can and will be disrupted by the Blockchain. As a result, it is likely that many of these industries will

face job losses since intermediaries will be needed a lot less.
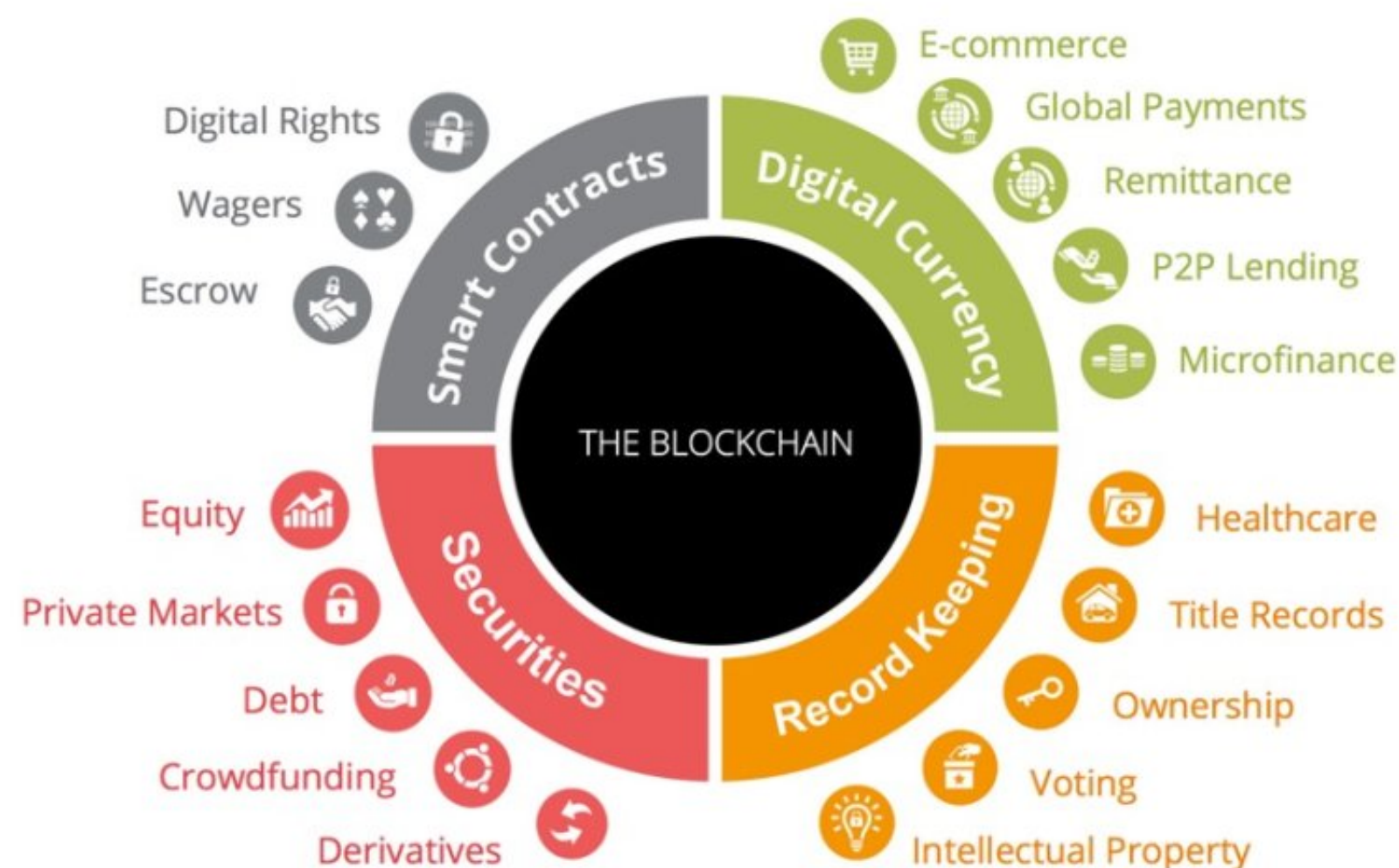
Source: BTCS.com

How Does the Blockchain Work?

So Blockchain is changing how we do business and will probably also affect our lives. But what is Blockchain and why is it so important? Since I am incorporating the Blockchain in my research for my PhD at UTS, I thought it was a good exercise to try to explain it to you, with the help of a great infographic I came across.

Simply put, the Blockchain is a shared single version of the truth of anything digital. It is a database technology, a distributed ledger that maintains and ever growing list of data records, which are decentralised and impossible to tamper with. The data records, which can be a Bitcoin transaction or a smart contract or anything else for that matter, are combined in so-called blocks. In order to add these blocks to the distributed ledger, the data needs to be validated by 51% of all the computers within the network that have access to the Blockchain.

The validation is done via cryptography, which means that a mathematical equation has to be solved. Solving the mathematical equation is difficult and requires a lot of computing power. However, once it is solved it is immediately clear that the answer is correct. This can be compared to a crossword puzzle, which can be very difficult to solve, but once completed you immediately know that it is done correctly.

Once the validation is done, the Block will receive a timestamp, a so-called *hash*. This hash is then used to create the next block in the chain. If even one bit in the block changes, the hash will change completely and as a result, all subsequent blocks in the chain will change. Such a change has to be validated again by 51% of all the nodes in the network, which will not happen because they don't have an incentive to work on

'old' blocks in the chain. Not only that, the blockchain keeps on growing, so you would require a tremendous amount of computing power to achieve that, which is extremely expensive. So it is simply not worth it to change any data. As a result, it is nearly impossible to change data that has been recorded on the Blockchain.

The result is that peer-to-peer transactions become possible, without the need for a centralised certifying authority, such as a bank, which usually takes a small commission to carry out the work. If third parties are no longer necessary and organisations or consumers can do transactions peer-to-peer, which are also processed nearly instantly, that is a paradigm shift and that's why the Blockchain is so important.

Of course, there is a lot more to the Blockchain than the brief description I have provided here. There are public and private Blockchains or Permissioned or Permissionless Blockchains. There are a wide variety of applications possible on the Blockchain, ranging from shopping, voting or renting out your house/boat/car/office to reputation systems. There are many different Blockchains (Bitcoin Blockchain, Ehtereum, Hyperledger, etc.) or cryptocurrencies (Bitcoin, Ether, Steem Dollars, etc.) and marketplaces to trade these cryptocurrencies. I'll leave that for another blog post.
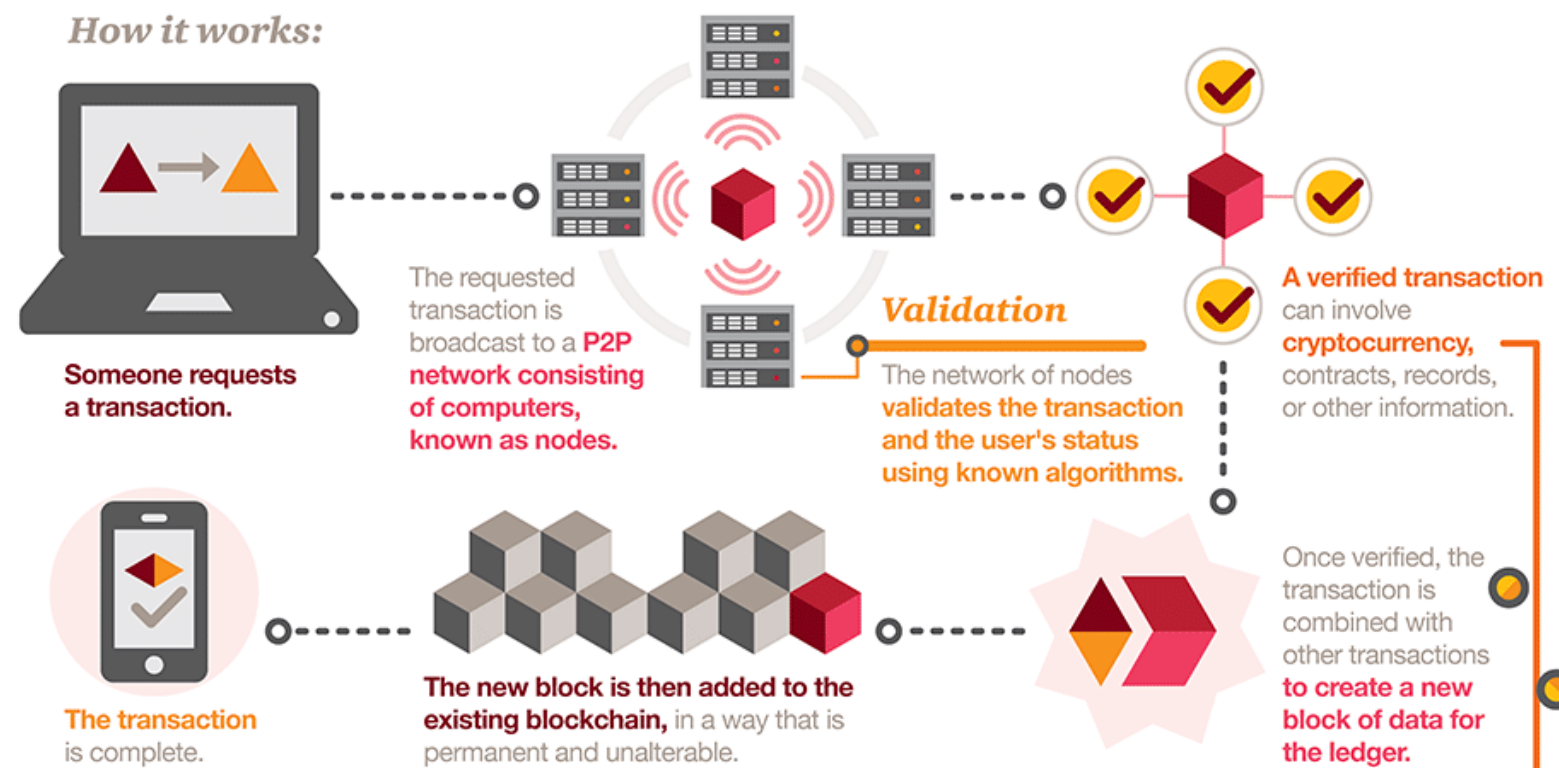
For now, the below infographic made by PWC, gives a good visual overview of what the Blockchain is and what the benefits are:

A look at blockchain technology

What is it?

The blockchain is a decentralized ledger of all transactions across a peer-to-peer network. Using this technology, participants can confirm transactions without the need for a central certifying authority. Potential applications include fund transfers, settling trades, voting, and many other uses.

How it works:

Someone requests a transaction.

The requested transaction is broadcast to a **P2P network consisting of computers, known as nodes.**

Validation

The network of nodes **validates the transaction and the user's status using known algorithms.**

A verified transaction can involve **cryptocurrency,** contracts, records, or other information.

Once verified, the transaction is combined with other transactions **to create a new block of data for the ledger.**

The new block is then added to the existing blockchain, in a way that is permanent and unalterable.

The transaction is complete.

Benefits

- Increased transparency
- Accurate tracking
- Permanent ledger
- Cost reduction

Unknowns

- Complex technology
- Regulatory implications
- Implementation challenges
- Competing platforms

Cryptocurrency

Cryptocurrency is a medium of exchange, created and stored electronically in the blockchain, using encryption techniques to control the creation of monetary units and to verify the transfer of funds. Bitcoin is the best known example.

Has no intrinsic value in that it is not redeemable for another commodity, such as gold.

Has no physical form and exists only in the network.

Its supply is not determined by a central bank and the network is completely decentralized.

Potential applications

Automotive

Consumers could use the blockchain to manage fractional ownership in autonomous cars.

Financial services

Faster, cheaper settlements could shave billions of dollars from transaction costs while improving transparency.

Voting

Using a blockchain code, constituents could cast votes via smartphone, tablet or computer, **resulting in immediately verifiable results.**

Healthcare

Patients' encrypted health information could be shared with multiple providers without the risk of privacy breaches.

Sources:
"Money is no object: Understanding the evolving cryptocurrency market," *PwC, 2015*
"A Strategist's Guide to Blockchain," *strategy+business, January, 2016*
"How Blockchain Technology Is Disrupting Everything," *TechDay, 2016*

pwc

© 2016 PwC. All rights reserved. PwC refers to the US member firm or one of its subsidiaries or affiliates, and may sometimes refer to the PwC network. Each member firm is a separate legal entity. Please see www.pwc.com/structure for further details. This content is for general information purposes only, and should not be used as a substitute for consultation with professional advisors.

Read more about fintech, digital trends and innovation.
Visit PwC's Digital Pulse: www.pwc.com.au/digitalpulse

This blog originally appeared first on Datafloq.

Tagged in: cryptography, bitcoin, big data

Report this

Mark van Rijmenam
Founder Datafloq | Big Data Strategist | International Keynote Speaker | Author | PhD Ca…

Follow

47 posts

3 comments

Leave your thoughts here…

Paul Barsch · · · 2w
Technical Marketing | Digital Marketing | Content Marketing | Integrated Marketing

Wonderful and timely piece!

Like   Reply | 👍 6

Ludmila Morozova-Buss · · · 6d
Business Technology and Cybersecurity. Roundtable. Owner

This is probably the best article that I read in years on the Blockchain technology. Ludmila M-B

Like   Reply | 👍 2

There is 1 other comment. **Show more.**

Don't miss more posts by Mark van Rijmenam

Why Blending Data Analytics and Gut-Feeling Benefits your Business
Mark van Rijmenam on LinkedIn

Why the 2016 Hype Cycle for Emerging Technologies is all about Data
Mark van Rijmenam on LinkedIn

Why Humanizing Algorithms Could Prevent them from Going Awry
Mark van Rijmenam on LinkedIn

Looking for more of the latest headlines on LinkedIn?

Discover more stories

Help Center | About | Careers | Advertising | Talent Solutions | Sales Solutions | Small Business | Mobile | Language | **Upgrade Your Account**

LinkedIn Corporation © 2016 | User Agreement | Privacy Policy | Ad Choices | Community Guidelines | Cookie Policy | Copyright Policy | Send Feedback