

***THE BLOCKCHAIN
WILL CHANGE
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Ray Hammond

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When the internet first arrived in 1984 I said it would change everything.

Over 30 years later it is still busy changing everything and, as the Internet of Things grows in scale, it is clear that the internet has become the nervous system of our smart, connected world.

Now it is becoming clear that the Blockchain will be another network technology that changes everything. It will become as important as the internet.

As you know, the Blockchain is the database technology behind Bitcoin - but even if that digital currency fades away or remains just a niche curiosity, it is rapidly being overtaken in importance by its own underlying authentication system.

A Blockchain is a digital record of transactions. What's special about the Blockchain database is that it is distributed and transparent – which means there are always copies of the records being made and circulated – and that makes it almost impossible to hack. Everyone in the chain knows instantly if an attempt is made to alter or falsify a record.

Today, the Blockchain database registers each time a bitcoin is spent and changes hands. Because such a transaction involves checking the unique number and the digital signature of the token, a duplicated, copied or faked bitcoin can never be spent (because the database has no record of the fake token and would reject the transaction).

In the last few years many financial institutions have realised that Blockchain technology has huge applications for moving money about and for securely recording transactions.

Goldman Sachs, Barclays, Citigroup and J.P. Morgan are just a few of the major financial institutions developing Blockchain technology to record their transactions. Recently the world's major banks created an

international committee to agree standards for the future adoption of Blockchain technology.

In the banking crisis of 2007-2008 one of the main problems was that banks stopped trusting each other. But when money is moved and recorded on a Blockchain, there is no room for doubt. Trust is automatic. This is a very important concept.

In the near future banks will be exchanging billions of dollars via Blockchain technology. Soon afterwards consumers will be using Blockchain technology to pay bills and receive payments – including salaries, pensions and benefits.

Blockchain will also end cash counterfeiting. Soon all paper money will be issued with unique serial numbers and a digital signature such as a bar code recorded on the Blockchain.

When somebody tries to spend a fake \$100 dollar bill a check will instantly reveal if the note is real – or if it's been stolen. The Blockchain will also make money laundering much more difficult. And when development is

donated to a developing nation using the Blockchain, it will be impossible for any of that cash to disappear without everyone involved knowing who took it and when. Corruption in government and in business will be greatly reduced.

Your personal credit record will also be recorded in the Blockchain – as will company credit scores. Inter-company fraud will be greatly reduced.

But however useful Blockchain technology may be for banks and governments, that alone would not make me suggest that the Blockchain will change everything. In fact, the Blockchain will reach into the very depths of our personal lives.

A record in a Blockchain can be about anything. The sale of a diamond, the sale of a house, the sale of stocks or shares, the birth of a child, a conviction for a criminal offence, passing an examination, being awarded a university degree, getting married, getting divorced, taking a loan, placing a bet, being issued a passport, making an insurance claim – and so on.

Now, as I've already mentioned, once recorded an item in a Blockchain CANNOT be altered without the alteration being known.

The Blockchain is sometimes called a distributed ledger because it's rather like an old-fashioned book-keeping ledger in which a clerk would record transactions.

But imagine that ledger having thousands of identical copies distributed in different locations all over the world. Every time an entry is made in any one of the ledgers all of the other identical ledgers are updated instantly.

That's how Blockchain technology works and it's virtually impossible to hack it or defraud it.

Farmers will log their produce in the Blockchain and the end consumer can be guaranteed about the food's provenance. Fishermen will record their catch and consumers can have a guarantee of its origin.

All legal weapons will be registered on the Blockchain and their history will be immediately available.

Your CV and work history will be on the Blockchain and will be immutable.

Fine art, cars, jewellery, boats – in fact anything of value or importance in our lives – will be registered and tracked on the Blockchain.

Democracy will be revolutionised by the Blockchain. Because distributed-ledger technology can certify that you are who you say you are, on-line voting for democratic elections will become possible. The Blockchain can ensure nobody votes more than once and can also ensure that votes remain anonymous.

Today few young people vote because it is an analogue process carried out in physical polling booths. The Blockchain will allow all of us to vote with a click.

In the future we will become Blockchain babies.

When we're born an entry will be made in the Blockchain and a link to our DNA record will be permanently created.

As we grow our educational and sporting records will be added and, throughout our lives, our medical records will be authenticated by the Blockchain. Our deaths will become our final entry on our Blockchain,

In fact, we will become the Blockchain and it will become us – it will become our authentication.

Of course, there are privacy issues to be addressed – it will be important that individuals have complete control over the sensitive information held in the many records that are authenticated by the Blockchain.

But the benefits of a Blockchain world will be great. Fraud will be dramatically reduced, crime will become much more difficult and identity theft and misrepresentation will disappear.

In our digital future the Blockchain will guarantee that we are who we say we are.

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