

## **Understanding blockchain: beyond the banks**

By Gerald Celente, for Daily Reckoning, Australia, 3 June 2017

If you want to talk about a big trend that began taking shape, look no further than the state of cash — the pace at which currency across the globe was challenged or devalued accelerated in the past year.

The stage is now set for even greater momentum: In 2018 and 2019, there'll be a global sprint toward digital currency.

Sweden — where barely 2% of all payments are in cash — is leading the way.

Government-orchestrated demonetisation efforts in India, Britain, France, Austria, Belgium and other countries are also fuelling the cashless movement.

Ranging from eliminating some currency, to negative interest rates on cash deposits, to assigning fees to cash payments and more, the war on cash grows in reach and intensity.

And so does the growing investment in the technology needed to support a digital currency world.

Debit cards were our first big step toward a cashless economy...

...Blockchain technology now lies at the heart of the second step.

Groups ranging from Wells Fargo to the London Stock Exchange are getting ready for a blockchain-based future.

You should, too.

Perhaps as early as next year, your bank or investment manager could be managing your money with blockchains.

This technology also has a rich future in the online shopping world. It can be used to not only store currency in a digital wallet that is accessed over time but to track purchases and shopping preferences.

### **The roots of blockchaining**

Blockchains were devised as the accounting system for the Bitcoin online currency, also often called a 'cryptocurrency' because it doesn't physically exist.

But once their special qualities became clear, blockchains were quickly adopted for all kinds of uses.

Medical labs use them to track specimens' movements. Lawyers use them to record signatures to contracts. People, individually or in groups, can use them to buy and sell among themselves, using their own forms of value.

So what's a blockchain? How can it replace cash?

Put simply, a blockchain is a series of pieces or ‘blocks’ of digital data, chained together by computer code.

A block may be a transaction, such as a check you write. Or it could be an integrated group of transactions, like your monthly banking statement listing all debits and credits.

A chain is a series of blocks linked sequentially through digital code. Usually, a chain orders its blocks chronologically, though there are other ways to group or sequence the blocks.

A blockchain can be permission-less, meaning open to anyone, such as bitcoins are. It also can be ‘permissioned.’

Those are usable only by people authorised by others already in the chain.

This doesn’t seem all that unusual. But two additional features make blockchains special.

1. **A blockchain is secure.** Often, users get a passcode. Some chains use two codes: one to enter the chain, the other to identify an individual user. Once a transaction is entered into the chain, it can’t be altered or deleted. This makes a blockchain a reliable, hard-to-dispute record of who did what.
2. **A blockchain is distributed among its users.** When a transaction is added to the chain, a new copy of the chain is sent to all participating in it. This ensures no one can attempt to fiddle with data in a chain’s blocks without everyone in the chain knowing.

Another security measure, and one with appeal to online retailers: When a block is added to the chain, every copy of the blockchain in the user network automatically runs a digital security protocol.

That makes sure the entry is legitimate — that it’s being entered by someone authorised, or that the entry doesn’t violate the chain’s rules of operations, for example.

If a majority of copies of the blockchain return a positive verdict, the block is entered into the chain. If a significant number of copies send up a flag, the block is rejected.

Here’s what makes blockchain technology truly revolutionary: Blockchains don’t require a central administrator.

No bank needs to clear your checks or provide your balance.

No notary public needs to vouch for your signature on a contract.

No treasury is needed to issue “legitimate” currency.

Blockchains define their own purpose, their own measures of value, and keep their own accounting.

### **Banks scramble to stay relevant**

If our concept of money is about to change fundamentally, no one is more interested than banks.

Deutsche Bank has called blockchains a ‘wake-up call’ to the financial industry.

Using digital currencies in global trade requires no credit cards, no lines of credit, not even a checking account. The bank noted that a person could become a Bitcoin billionaire without ever having dealt with a bank.

In fact, almost everything a bank does — keeping deposit accounts, making loans and taking payments — could be done via blockchains.

So banks are scrambling to figure out how to bring blockchain technology in-house and remain relevant in a financial system lurching through major changes.

The scramble is taking them places.

IBM surveyed 200 major banks in 2016. It found 15% will begin using blockchains in 2017. That's happening. Two-thirds will use blockchains routinely in commercial products before 2022 — 'dramatically faster than expected,' the survey said.

One blockchain developer said more than 100 banks have contacted it to learn how blockchains might work for them.

IBM also surveyed 200 nonbank financial businesses around the world. It found that 14% expect to launch commercial blockchain products in this year.

No bank has placed a bigger bet on this than Bank of America.

Last year it was granted 15 patents on blockchain applications.

It also reportedly filed for at least 20 more, including a 'suspicious user alert system' and a 'cryptocurrency risk detection system.'

In partnership with Microsoft, Bank of America also is testing a blockchain-based letter of credit.

Here's how it works...

A bank gives a letter of credit to a third party that the bank's customer is transacting with. If the bank's customer isn't able to pay the third party, the letter guarantees the bank will.

Microsoft and the bank documented the number of steps and time it takes to create a letter of credit. That may include handwritten notes, phone calls, faxes and sending papers around for signatures.

They discovered the process comprises 15 steps, takes an average of five days, including time to play phone or email tag and correct mistakes. And they found it can cost \$2,500–15,000 in banks' time and other resources to create.

Distilling those steps into a blockchain, the partners ran real-world trials. Those tests reduced the number of steps to four and the transaction time to 10 minutes.

JPMorgan has created a team to investigate blockchains' potential, investing more than \$2 billion. UBS says its London-based Crypto 2.0 team has sifted through at least 20 possible blockchain applications.

It is refining the most promising into commercial products. Barclays has speculated about digital currencies' ability to reduce the amount of capital regulators require banks to keep on hand. Germany's Bundesbank is testing a prototype of a blockchain-based stock-trading system.

### **The future of finance**

The Swiss have taken the idea of digital banking even further...

The country's Financial Market Supervisory Authority is laying the legal and regulatory groundwork for the creation of 'cryptobanks.'

The measures reduce the capital requirements for these new banks. They also acknowledge that banks need wiggle room to adapt regulatory compliance to their varying business models.

(The Swiss canton of Zug has become known as Crypto Valley for its concentration of blockchain-related businesses. The government there has voted to begin accepting Bitcoin as payment for certain government services.)

At a conference in September 2015, the chairman of Switzerland's central bank even mused about the possibility of central banks issuing electronic currencies.

But he doesn't have to muse any more...

On 9 November 2016, the National Bank of Ukraine revealed its plan to issue electronic money in a blockchain structure no later than 2017's fourth quarter. The Monetary Authority of Singapore is mulling a similar step.

But the private CoinsBank goes further. You can make deposits and withdrawals in the world's major currencies at this entirely online financial house. You can conduct most banking functions in Bitcoin or by other digital means.

Some financial insiders are skeptical of CoinsBank's ability to deliver — or even remain solvent. But many see this as proof of the financial industry's future.

However, that future may be further away than enthusiasts predict. Banks are under pressure from regulators, low interest rates and technological disruptions. That makes them eager to adopt methods that cut costs.

But blockchains' transparency and lack of centralised control challenges banks' traditional culture of privacy and control.

Banks sharing a blockchain could peek at each other's loans and other transactions.

A simple math mistake — an extra zero on the amount of a deposit or withdrawal, for example — could be fiendishly difficult to correct.

Also, most regulatory agencies haven't seriously begun to match blockchains' effects to the drastic changes needed in regulatory structures if the new technology is to work efficiently.

Hong Kong's central bank also has voiced concerns about blockchains' susceptibility to money-laundering schemes.

The road ahead is bumpy. But banks have no choice; they must travel it. Blockchains, analysts agree, are the future of finance.

### **Blockchains reach beyond banks**

But blockchains are good for much more than logging payments. They can be used to validate the security of anything with value.

Gem, another blockchain entrant, has partnered with Capital One and health care giant Philips to smooth and speed payments for medical insurance claims.

With providers, insurance carriers and banks using different processing platforms, payouts can take weeks. Gem's blockchain-based system creates a common platform among all involved. The shared system also assures each entity that the claim is valid and that previous steps in the process have been completed.

In another application, the US company Learning Machine has partnered with MIT's Media Lab to create a blockchain that stores and verifies academic degrees and professional certifications.

The graduate can store diplomas and certificates electronically on a smartphone. Because the credentials have been stored on a widely distributed blockchain, any potential employer or client will know they're genuine.

Credly and Digimaat offer similar services.

Last year, the US Department of Homeland Security gave a \$199,000 grant to Factom, a company in Austin, Texas, to figure out ways to use blockchain designs to maintain the integrity of the internet of things.

With every device connected to every other one through the internet, the potential for hackers and malware skyrockets.

Blockchains may be a new tool for cybersecurity.

Factom also has partnered with the Honduran government to create a blockchain to record and safeguard land titles in a part of the world where ownership records have a long history of being messy or falsified. The Republic of Georgia is working with the company Bitfury on a similar project.

Now with a grant from the Bill and Melinda Gates Foundation, Factom is setting out to apply blockchains to secure electronic medical records.

It's not only about keeping snooping insurance companies from prying into your health history.

There's also the problem that medical records in developing countries or remote regions aren't always accessible and sometimes not updated quickly. Blockchains resolve those problems.

By keeping medical records in a blockchain, each vaccination or procedure can be entered on the spot through a tablet or smartphone. Medics traveling in rural areas can access the records via the same kinds of portable devices and be assured of records' integrity.

Using the blockchain's options, people could decide who may see their medical records. People could even have ready access to their own records, instead of wrangling with a doctor before getting a look.

Blockchains also can be buried in supply chains. A Swiss startup called Modum.io snagged a \$25,000 prize in a Kickstart competition by combining its blockchain design with temperature sensors to verify that pharmaceuticals needing to stay cool have remained within their needed temperature range during transport.

Given the US turmoil surrounding the election of Donald Trump last November, blockchains also are drawing attention as a way to validate vote counts.

Fake news and claims of voter fraud, even unsupported, destroy the trust at the heart of democracy. Blockchains' power to validate transactions may be an antidote.

The Follow My Vote project advocates a vote-by-blockchain approach and is marketing software that makes it possible.

Each vote would be a 'transaction' recorded as a block in the chain. Each voter would be given a unique access code that would let that voter follow the progress of his or her vote through the ballot box to the final vote tally. Votes would still remain secret unless a voter shared that unique access code.

Despite blockchains' usual security features, hackers and malware may still be able to crack vote 'blocks' cast on conventional computers.

To keep those votes safe, Follow My Vote provides a special computer operating system for voting. The company will teach voters how to use it.

### **Blockchains' future**

Banks won't be the only users finding bumps along the blockchain trail.

First, blockchains' possibilities are blossoming so quickly that the field already is desperately short of skilled coders and developers.

In addition, advocates point out that in these heady early days, enthusiasm for blockchains outstrips their usefulness. Not every project will benefit from blockchains; many will fail or be abandoned.

Another complication: Blockchain technology is 'open source.'

That means anyone can create their own version of it. As a result, several designs are in use and often are incompatible with each other.

To set a standard, more than 30 major companies — including Hitachi, JP Morgan and Intel — have formed Hyperledger.

That project aims to settle on a general-purpose blockchain structure that can be used by any enterprise in any industry. IBM already has chipped in tens of thousands of lines of software code to the venture.

These companies, like so many others, invest in the effort because they foresee the benefits.

Blockchains will transform the way we exchange value in our digital, cyber-insecure future.

**Gerald Celente**  
**for The Daily Reckoning Australia**