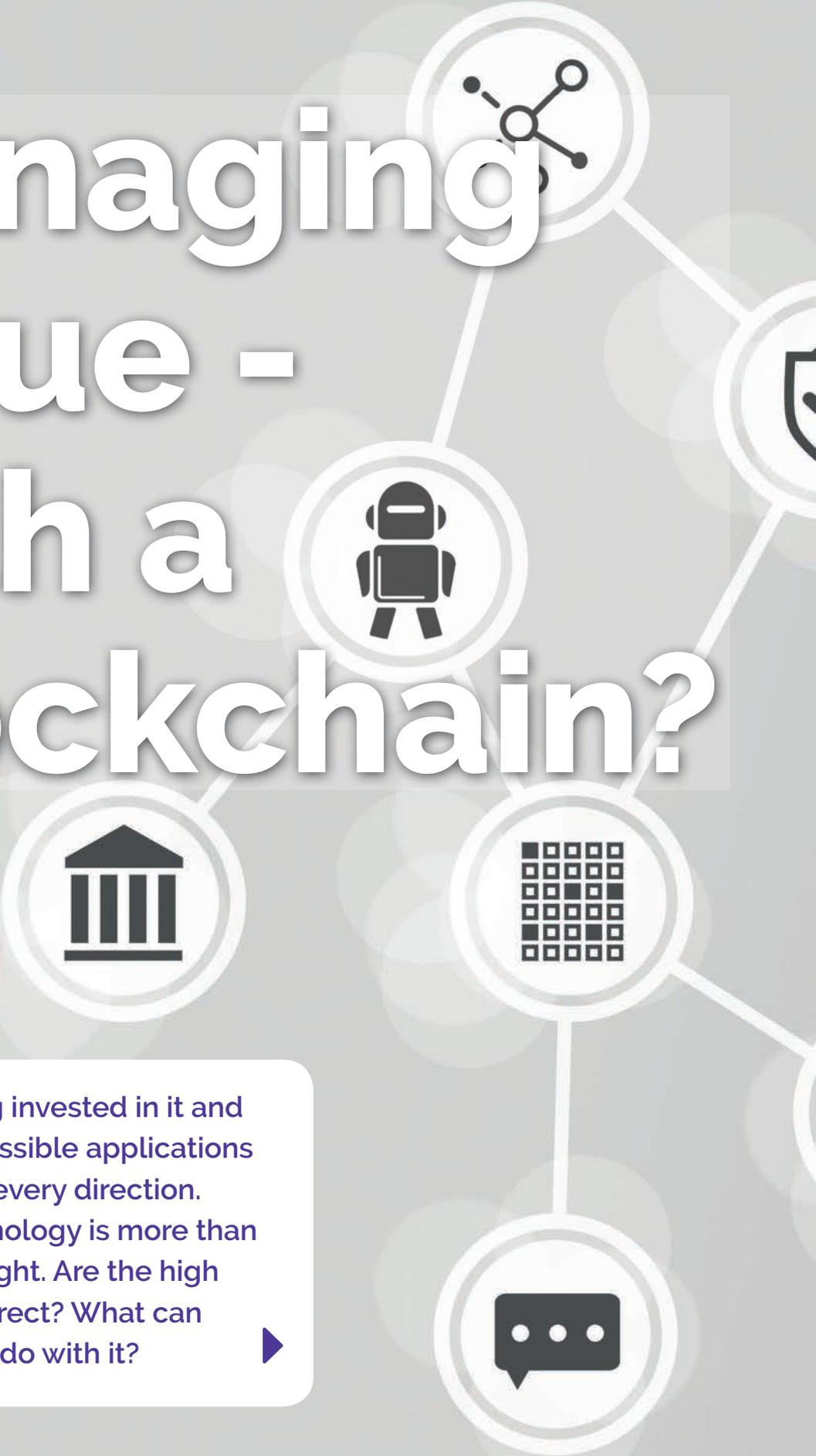


Managing value - with a blockchain?



Billions are being invested in it and the search for possible applications is fanning out in every direction. Blockchain technology is more than ever in the spotlight. Are the high expectations correct? What can you do - and not do with it? ▶



If blockchain is a hype, it's nevertheless one that many are taking extremely seriously. "The technology is developing increasingly faster and billions are being invested", says Frank van de Ven of Deloitte. "And its applications are increasingly becoming more concrete." His job at Deloitte involves working together with AEGON on the first real insurance policy on the blockchain.

In recent years it was mainly the financial sector that explored the possibilities offered by blockchain. Which is not strange for a technique that first gained awareness in the form of a virtual currency, the Bitcoin. In the meanwhile it has become clear that blockchain offers the possibility of many more applications. Eelco Simon (CED): "Virtually everything you can save and share via a classic database, you can also include as 'transactions' in a blockchain. Except that it's often easier, more efficient - and more secure."

The unbreakable blockchain

To begin at the beginning; What is a blockchain, exactly? "Simply put, it is an identical series of digital ledgers, which you can think of as databases", says Simon. Characteristic of a blockchain is that each party connected to it has its own ledger and that these are all identical, equivalent and

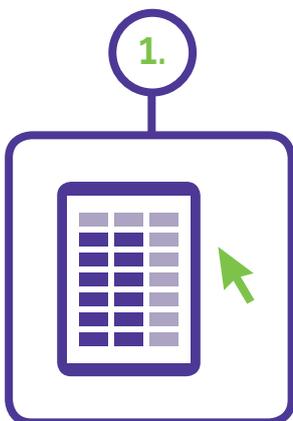
“Developing smart contracts is a promising application.”

synchronised in real time. So there is no original: every change in one ledger is also processed in all the others." In this principle lies the strength of the blockchain. It makes transactions very transparent and highly fraud resistant. Everyone can see everything and every addition must be verified by the other ledgers. The transactions are then packaged into 'blocks', using a pre-agreed algorithm, and strung together in a chain, which is then effectively tamper-proof.

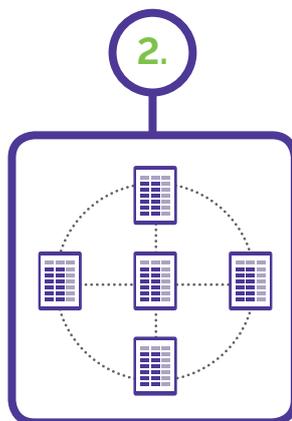
Organising trust

"Blockchain is a very elegant and, above all, efficient way to arrange trust", says Douwe Lycklama from Innopay, which specialises in innovative transaction technology. "Normally, with transactions between parties, you almost always need a trusted third party - a neutral party that controls, monitors and secures all transactions. In the way a bank coordinates

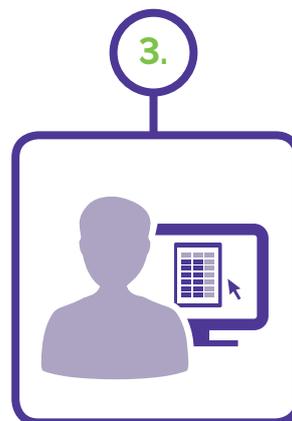
How does a blockchain work?



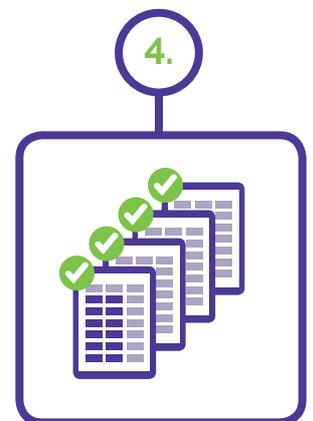
A ledger is set up - a digital data construct in which you can store a range of encrypted transactions.



All parties participating in the blockchain host a personal copy of the ledger. They are all identical and are continuously connected to each other.



Connected parties add a transaction to their ledger.



The other ledgers authenticate the transaction on the basis of predetermined rules. In some blockchains a transaction must be approved by all ledgers, in others by a majority.

payment systems and Dropbox coordinates the files you share with others."

With a blockchain you no longer need a trusted third party. Parties can add data directly to a shared blockchain in the knowledge that the blockchain itself provides the security. Lycklama: "The only risk factor that you have to control is the one programmed by the blockchain itself and its corresponding algorithm. But you only have to do that once, in advance. If that's in order, the encryption mechanism ensures that the blockchain is watertight."

What can you do with it?

The range of possible blockchain applications is broad and covers much more than financial transactions. There are also many opportunities in the field of value management. A much-mentioned example is the storage of information about objects - such as registration of ownership, the history of the object and its current location. Simon: "There is, for example, a start-up that registers the intellectual property rights of works of art in a blockchain. Another is working on registering information on containers in a blockchain."

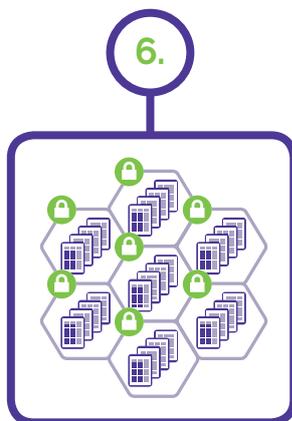
Yes or no to the blockchain?

Blockchain is a very versatile technology, but one doesn't necessarily want to apply all its capabilities. Lycklama: "There are limitations to the speed of the system, precisely because of the principle that each transaction has to be verified. It is therefore not suitable for applications with very large numbers of transactions."

Van de Ven: "Its high level of fraud resistance makes the blockchain particularly suitable for high-value products. But it only makes sense if you need to arrange and secure a mutual trust situation involving several parties. If only two parties who have no reason to doubt each other are involved, then a normal, central database is sufficient."



After a few transactions, the ledgers 'package' a set of authorised transactions using an algorithm in an encrypted block.



This block then forms the first transaction in the next series of transactions. And this process continues to repeat itself.



Attempts to change a transaction afterwards can be detected immediately. The relevant block would, of course, change in value and this would be reflected in all subsequent blocks.

This means that all involved parties – principal, carrier, insurer, you name it – always know exactly where a container is located, what's inside it and whether all of its paperwork is correct."

You can apply this principle in numerous areas. "You could, for example, store all the transactions concerning a car in a blockchain. Its purchase, every service, any damage and the repair thereof, the various owners. With this information you can determine the value of a car much more objectively and more transparently". Lycklama foresees that this type of application could really take off. Certainly with the rise of the Internet of Things, as a result of which objects will generate much

valuable information. This could be more easily and more efficiently secured and shared in a blockchain.

Compliance and smart contracts

Another area in which the blockchain could add value is in more efficient compliance monitoring, according to Lycklama. "Showing compliance with regulations becomes easier if, for instance, instead of receiving annual reports, a supervisory authority could have 'live' access to a blockchain."

Perhaps the most promising application, certainly in the short term, is the development of smart contracts. If all interested parties are connected to a blockchain and there is no concern about the

Insurance via the blockchain - in practice

The first test case involving a fully-fledged insurance policy via a blockchain is already in sight, in the Netherlands. AEGON and Deloitte are working on offering a term life insurance policy, via a blockchain. What will it look like and what are the benefits?

The product now being developed is an example of a smart contract. The consumer, insurer and mortgage provider (and perhaps also the broker and doctor) will soon have access to it. "They will be able to select pointers to allocate all necessary documents and rights", says Frank van de Ven (Deloitte). "So a doctor, for instance, would only have to indicate that the medical declaration is there, provide a link and tick a box to allow access for both the policyholder and insurer. In terms of legislation we are not yet ready for such an application, but it is possible."

Automated transactions

What do AEGON and Deloitte hope to achieve with this initiative? "For AEGON it means less administrative work. Once the blockchain is set up, it can independently and automatically monitor whether the insured person still meets

the requirements and is paying the premium. Everyone always has access to the same, current source of information. And via the blockchain you can completely automate aspects like transfer or pledge of the policy and even payment of the death benefit."

The next step?

The concept has meanwhile gone through a test phase and the next steps are being looked at now. "A life insurance policy is a relatively small and manageable product, but setting up a blockchain for it is still a lot of work. We need to connect all the data and ensure that all the old and new processes are coordinated. This includes coordination with, among others, regulatory authorities and legal departments. But if it succeeds, it is in our opinion the prelude to smart contracts for more complex insurance products."

“Insurers could automate the payment of claims. Thanks to the blockchain.”

reliability of the data, automatic transactions can take place by means of business rules. Lycklama: “Actions arising from a contract can then be automated. The payment of a claim, for instance.” An example is an already existing insurance that automatically pays out on flight delays, via a link with airport information systems. Lycklama emphasises, however, that this is only possible if it concerns relatively simple, objective criteria. If a flight departs late, there’s no question about it. “But in complex claims the decision will still be made by people.”

Under the bonnet

The bottom line is that the blockchain could reduce costs considerably, in suitable applications. Not only by automating transactions, but also because setting up and securing a blockchain is much cheaper than the traditional way of working.

As a result it would become attractive to develop niche products which are currently not profitable, says Van de Ven. “Think of micro-insurance, for example, to cover loaned goods. I can imagine that you will soon be able to lend your camera to someone, who could then take out temporary insurance, for a few hours.”

One could also market such cover in the form of traditional insurance, but the premium would put off many consumers. Lycklama: “Blockchain is invisible technology - under the bonnet. I liken the effect to the emergence of VoIP calling, internet telephony. All that consumers have noticed is that calling has become better and cheaper. It’s the same with blockchain. There are few applications that you can’t also achieve with other technologies. For some applications blockchain is just better, more secure and more efficient.” ■

