



## **Advantages of distributed ledgers: Increased transparency**

### ***Verification***

Blockchains will make it easier, faster, and cheaper for us to verify that a piece of data is true. Blockchains accomplish this by making it possible to take anything that you can represent digitally no matter how small and certify it. Certification of the digital file is verified by a blockchain based multi-node platform which stores the cryptographic hash associated immutably with the file. This gives us a way to move valuable things safely and directly from one person or organization to another in digital form such as the title of a house or a car GPS coordinates which identify the location of manufacture.

### ***Saving time and costs***

When organizations have competing interests and need to verify that a piece of data is true, this is done manually at great expense and time. With blockchains, this work of checks and balances is delegated instead to cryptography and code. It is done by providing a shared ledger or bookkeeping records that we can trust. There is not one organization that is keeping that register or record. Instead, there is a distributed network of computers, owned by many people and organizations, often all over the world. Each has a copy of the blockchain. All the computers on the network must agree that a transaction is legitimate before they write it to the ledger. But why is it called a blockchain? Those transactions are all wrapped up in blocks, and they are permanently chained through cryptography to all the blocks before them. That is how we get the name blockchain. To tamper with a particular transaction, someone would need to take over most computers in the network and change not just that single transaction, but the entire history of the blockchain. So, once it is recorded, it is tamper proof. So, with this blockchain version of a ledger that is shared and decentralized, we do not have to go through anyone else to check what is true. We do not have to use a bunch of complicated business processes and cross checks that are tracked as if you are on a trail of paper. We can check it directly.

Typically, as things move from organization to organization, we have accounting review invoices, and to reconcile the shipments, we do chargebacks when something spoils, we wait until we confirm products have arrived before we pay, and these checks and balances create friction. They are time consuming; they are costly, and the more steps involved, the more prone they are to errors and fraud. Each step is a speed bump that slows business down, and the impact goes right to your customers. When done right, blockchains can flatten the speed bumps and an entire ecosystem of partners can work together off a shared ledger and as things happen, they are recorded, on the ledger, which leaves a permanent history. This makes it possible for us to do business more safely with all kinds of trading partners and collaborators, even those with competing interests.

When email was invented, the cost and time of communicating plummeted, and likewise, as blockchains mature, the cost and time that it takes to confirm the integrity of data will plummet. This will make it worthwhile to exchange and reuse smaller increments of data in a collaborative business process

or in a new business model. We do not have an effective way today to let someone use your data without losing ownership or control of it. When you hand it over, you can no longer protect it or dictate how it is used without turning to legal agreements and those are expensive to put in place and enforce. What if we could simultaneously share and protect data and that protection was by default? Blockchains give us the power to share data with others and still control how it is used.

Blockchains will increase operational efficiency, whether that is reducing cost, time, or errors. They will cut friction in business processes that stretch across organizations which require so many checks and balances. This will create increased visibility to a business and its ecosystem by improving auditability, compliance, and transparency. Blockchains will increase security and privacy of data, especially when used with new cryptographic techniques.