



## Blockchain: a future game-changer for financial transactions

Blockchain has inspired a gold rush of venture capital-fueled startups and established tech giants, all seeking practical ways to apply the emerging technology to ordinary business purposes. Leading financial institutions are also actively exploring methods to harness blockchain to provide faster, more efficient and economical applications for their corporate customers.

Although blockchain developments might not bear fruit for several years, staying abreast of them will position treasury managers to be prepared when that day dawns.

“Like any new technology, blockchain has the capability to be thoroughly disruptive,” says Christopher Swanson, vice president, research and development for U.S. Bank. “It has the potential to fundamentally change much of what we do,” he adds.

As Swanson explains it, blockchain, best known as the technical foundation of the digital currency bitcoin, lives at the intersection of database technology, distributed networks and cryptography.

### Seeking the “truth”

Traditionally, one definitive record of most financial transactions resides at a clearinghouse, such as a bank, trust company or the Federal Reserve. “The entity that sits in the middle of transactions provides a golden record of the ‘truth’ to all parties to a transaction,” Swanson says. “The parties use that intermediary to determine what the ‘truth’ is.”

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In contrast, in a blockchain “distributed ledger,” each party has a set of information. An established protocol disseminated by peer-to-peer file sharing requires each party, electronically, to arrive at a consensus on the validity of a pending transaction before a new set can be accepted. The role of the intermediary is eliminated, and the parties to the transaction have sufficient information — secured using advanced cryptographic measures — to determine which transactions can go through and which can’t.

## Steps in a blockchain-based transaction

While anybody can conduct transactions via bitcoin — it’s known as a “permissionless” blockchain — businesses can choose, instead, to establish closed networks composed only of accepted players. Here are the steps that would be involved in a blockchain-based sale of goods from one business to another:

1. Company A agrees to purchase 100 widgets from Company B at a set price, and pay for them 24 hours after they are delivered.
2. That agreement is entered into a distributed ledger system, creating a “future state.”
3. Time passes, and then B ships the 100 widgets to A. The shipment is tracked electronically, such as with an embedded radio-frequency identification (RFID) chip.
4. When the widgets arrive at A’s loading dock, the fact and place of their arrival are automatically transmitted electronically to the ledger system, where they are reconciled with the original terms of the contract.
5. The ledger system, recognizing that the contract requirements have been satisfied, starts the 24-hour countdown to payment.
6. After 24 hours, A automatically pays B to complete the purchase.

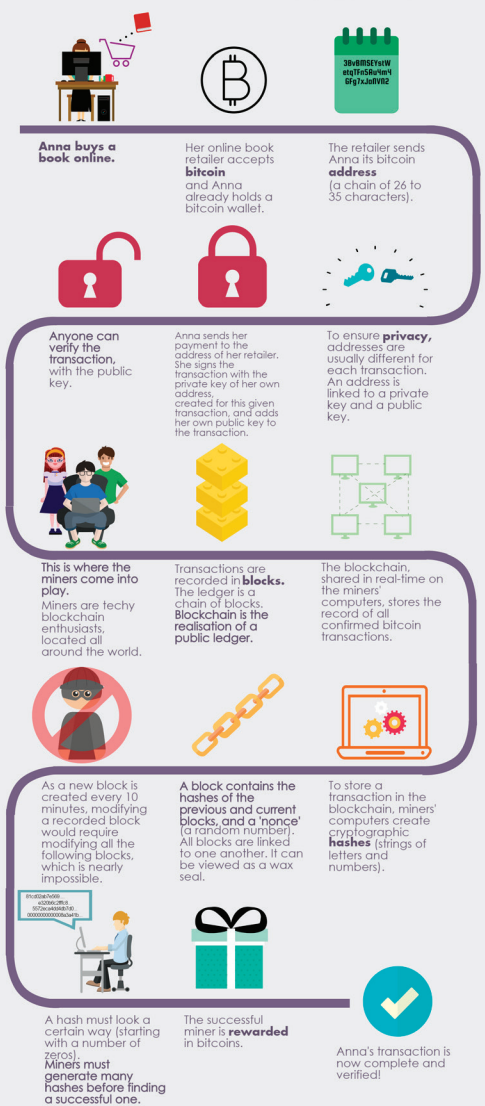
What’s special about this blockchain-based process is that no humans are involved in these steps after the original agreement is completed and input into the ledger. The payment can take any form the parties agree to. “It could be bitcoins, it could be digital representations of dollars, it could be anything, really,” Swanson says.

## Broader commercial application

Initial testing of blockchain-based transactions have included sales of securities, such as bank-to-bank trades involving interest rate and credit default swaps — deals that don’t always include a clearing agent. If a clearing agent or custodian does participate, their involvement can be minimal and not bog down the process. Such high-dollar transactions are a prime proving ground for blockchain because increased efficiency in such transactions can have a larger bottom-line benefit.

## HOW THE BLOCKCHAIN WORKS

The bitcoin illustration



European Payments Council blockchain technology poll, May 18, 2016.

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Broader commercial application of blockchain systems might be many years off. Implementation standards have yet to be established, cybersecurity systems need to be adapted, and the legitimate legal and regulatory concerns (particularly those involving banks) need to be sorted out.

Finally, people will need to become comfortable with such an intangible system. “It’s very different to send a transaction up into the ether where the code and the math determine whether that transaction is going to be allowed,” Swanson says.

He’s confident that day will arrive, however. “Watch this space,” Swanson advises.