

Tech underlying bitcoin could take off even if currency doesn't

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You may never use bitcoin, but there's a decent chance that you'll eventually benefit from the technology underlying the virtual currency.

The designers of bitcoin didn't just create a new kind of money. They essentially created a way of transmitting, recording and verifying information about ownership over the Internet. That system, called the blockchain, is in some ways comparable to the protocols used to send Web pages or email messages and could have similarly wide-ranging

implications with the potential to impact everything from real estate transactions to voting.

At the Future of Money and Technology conference in San Francisco earlier this month, investors, analysts, artists, bitcoin backers, entrepreneurs and technologists discussed and enthused about the potential uses of blockchain technology. Bill Tai, a venture investor and board member of BitFury, which helps maintain and distribute the bitcoin blockchain, compared the state of blockchain technology to the Internet in the early 1990s.

"It's crazy to see what evolved over next 15 to 20 years. I feel like we're at the front of the same thing," he said. "When you're looking at the applications of the blockchain, it's a crazily exciting time."

You can think of a blockchain as a kind of accounting ledger that's open to the public and widely distributed. Every bitcoin transaction is tallied on the bitcoin ledger. Each one is time stamped, encrypted, validated and recorded by multiple computers - and permanent.

In essence, the bitcoin blockchain is a history of all the transactions that have ever taken place with the digital money. You could use the blockchain to trace back how a particular bitcoin has changed hands over time to when it was created.

The blockchain technology was designed to ensure trust among bitcoin transactions. The system prevents bitcoin users from spending the same coins in multiple places or illegitimately creating new money out of thin air. It was also designed to work quickly, at least compared to the traditional means of transmitting money. New lines - or blocks, which represent collections of new transactions - are added to the blockchain ledger every 10 minutes.

Tainted by its volatility and use in illicit activities, bitcoin has struggled to gain wide acceptance beyond libertarians and anti-government types. But enthusiasts believe that the key attributes of blockchains - the speed with which they confirm transactions; their ability to convey trust among people who aren't known to one another; the way they create a kind of verified paper trail; and their automated nature - could give them a wide variety of uses outside of bitcoin.

Artists and those in the media business envision using blockchains and so-called "smart contracts" to automatically distribute royalties to all eligible rights holders when a song is played or a video is streamed. Other ideas for the blockchain and smart contracts include using them to transfer title and mortgages for real estate or even to pay property taxes automatically. Blockchains could also be used as the foundation for an ultra-secure electronic voting system or even a new kind of universal identification card, one that would only share as much information about you as is actually needed for each transaction.

Some of these applications are likely years away. Some will require new laws or regulations. And many will need to get buy-in from a critical mass of companies, institutions or governments before they take off.

But already, we're starting to see some real-world uses of the blockchain outside of bitcoin. Nasdaq is using blockchain technology to enable the trading of shares of privately held companies. Align Commerce, a startup based in San Francisco, is using bitcoin and the blockchain to help small businesses send money to overseas suppliers, forgoing pricey fees for traditional wire transfers. Chronicled, also based in San Francisco, is planning on using blockchain technology to verify the ownership of and authenticate collectible sneakers.

Blockchain is increasingly drawing the attention of investors. Venture capitalists have been shifting away from bitcoin-related startups to those

that are focusing on blockchain technology, noted Robert Schwentker, president of Blockchain University, an organization founded to teach software developers and entrepreneurs about the technology and help them develop applications and services that utilize it.

Plug and Play, the startup accelerator based in Sunnyvale, has been connecting giant financial services firms like USAA, Citigroup and Capital One with young companies that are developing services that use blockchain technology to keep track of mortgages and other important documents and records or to track real-world purchases and tie them to loyalty programs.

"There's a lot of talk now that we hear from our financial partners," said Scott Robinson, founder and director of Plug and Play's financial technology program. While those companies aren't convinced that they need to support [bitcoin](#), he said, "they're very interested in the technology of the blockchain."

Robinson added: "The impact of [technology](#) like this may be broader than we expect."

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