

A woman with curly hair and glasses, wearing a sequined top and light-colored pants, is looking at her smartphone. She is standing in a server room with blue lighting and server racks in the background. The image is overlaid with a green and blue geometric design.

FIDELITY INSTITUTIONAL INSIGHTS

# Bitcoin and Digital Assets

Understanding the Digital Ecosystem

# Interest in digital assets is growing.



of advisors had been asked about investing in cryptocurrencies over the previous six months.<sup>1</sup>



of advisors plan to increase their use or recommendation of cryptocurrencies in the next year.<sup>1</sup>



of institutional investors surveyed globally expect to buy or invest in digital assets in the future.<sup>2</sup>



<sup>1</sup> The “2021 Trends in Investing Survey” conducted by the *Journal of Financial Planning* and the Financial Planning Association®. The survey was fielded in March 2021. See endnotes for more details.

<sup>2</sup> Fidelity Digital Assets<sup>SM</sup> 2021 Institutional Investor Digital Assets Study. See endnotes for more details.



Bitcoin was the first cryptocurrency and has emerged as the most popular digital asset. **Many investors and advisors have started to explore how Bitcoin works in order to consider introducing it to their investment practice.**

However, digital assets are still very new, and can seem complex from an investment and regulatory perspective. Financial representatives may need help getting familiar with the reality and the potential of digital assets—separate from all the hype.

This guide will help readers learn some of the key concepts for Bitcoin and other digital assets as a starting point for future exploration. It covers the fundamental attributes of robust digital currencies, the core elements of blockchain and Bitcoin technology, and the key components of the expanding digital asset ecosystem.

**With the evolution of digital assets still very much in the early stages, this guide provides information useful for talking to clients and developing a position on this innovative new financial instrument and asset class.** It is not intended to be a recommendation of any investment or investment strategy.



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## The History and Attributes of Monetary Systems

Recent innovations have allowed for the creation of “fully digital” assets, a new type of asset class. By first understanding traditional monetary systems, we can better understand how digital assets may fulfill similar functions.



# Currencies: Representative, Fiat, and Reserve

Understanding the history of currencies helps us recognize how monetary systems work to transfer and store value.

## Representative currencies

Often printed on paper, representative currencies may have no intrinsic value on their own but represent a claim on something that does. For example, a government could circulate currency representing stores of gold or silver maintained by that government. Tying the currency to an asset held by central banks limits the ability of a government to expand its money supply and devalue its currency. Historically, the “gold standard” U.S. dollar was an example of representative currency.

## Reserve currencies

To facilitate international trade, many nations’ central banks hold reserve currencies, the currency of another nation. Currently, the U.S. dollar (USD) is the most widely held reserve currency, though many central banks hold an array of reserve currencies.

Reserve currencies have been used for centuries. Historically, dominant reserve currencies have tended to reflect the balance of international trade or the stability of the economy that issues it, with the expectation that these qualities support the currency as a reliable store of value.

## Fiat currencies

The Bretton Woods agreement of 1944 effectively made the USD into the world reserve currency, while allowing only governments and central banks to convert dollars into gold. That agreement also made the USD the standard for international currencies. After several government devaluations of the USD in the early 1970s, the U.S. removed exchange-ability to gold from the legal definition of the dollar in 1976. Since then, the USD has been a fiat currency, backed not by a claim on assets but by the assurances of the U.S. government and the ongoing agreement of participants in the system. Nearly all modern monetary systems use fiat currencies.

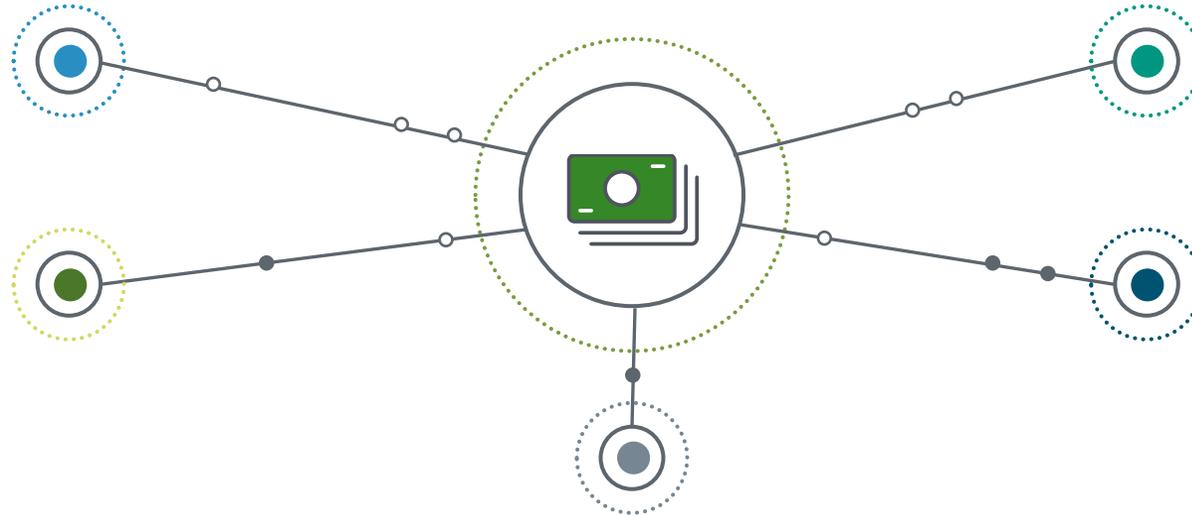


# Key Attributes of Robust Monetary Systems

For a monetary system to function effectively and reliably, it should have a few key attributes.

**Divisibility**—Can be split into standardized smaller units to allow for partial transfer between parties.

**Portability**—Can be transferred from one owner to another without a required intermediary.



**Durability**—Should be long lasting, not easily destroyed, and able to maintain value into the future.

**Seizure-resistance**—Can be owned by an individual who can take steps to prevent seizure by bad actors, corrupt governments, and others.

**Scarcity**—Supply must be limited, and the asset cannot be easily counterfeited or “double-spent.”



# Bitcoin's Fundamental Breakthrough

There have been many attempts at creating a robust digital currency using the internet. In 2008, Bitcoin (the technology) was proposed, and implemented soon after. An innovative structure called blockchain made the creation of bitcoin (a fully digital asset) possible.

## A brief history of Bitcoin

In October of 2008, an anonymous person or group under the pseudonym Satoshi Nakamoto released a white paper first describing Bitcoin. It was circulated during the Global Financial Crisis that had shaken confidence in traditional banking systems.

The paper described a technology for creating a global, peer-to-peer currency that cannot be counterfeited, is not controlled by a single entity or group, and is protected from censorship, corruption, and geographic limitations.

The paper describes two interconnected systems:

- 1 As an asset, **bitcoin** is an instrument of exchange that uses a new kind of database called a blockchain.
- 2 **Blockchain** is a groundbreaking new type of internet database that can be both distributed and authoritative. Blockchain makes secure and decentralized digital currency possible.



## How is Bitcoin technology different?

You might be thinking that digital transactions have been around for a long time and wondering what makes Bitcoin different.

Many previous digital payment and storage mechanisms—credit cards, gift cards, wire transfers, mobile payment methods, digital bank accounts—simply serve as a digital way of handling fiat money. The transactions rely on some sort of central authority, and the underlying assets are not inherently digital. Bitcoin is an asset that exists only in digital form, but like cash, it does not require a central authority for transactions.

# Bitcoin as a Robust Digital Currency

Bitcoin's underlying technology (the source code determining how it functions) allows for secure but direct (decentralized) transfer of value between parties. Using blockchain, Bitcoin was the first fully digital asset to meet all of the key attributes for a robust currency.



**Divisibility**—Bitcoin is designed to be divisible down to eight decimal places: a **satoshi** is 1/100-millionth of a bitcoin.



**Portability**—Secure peer-to-peer transfers can be made worldwide using encrypted transactions recorded on the blockchain. This ownership record makes bitcoin a "bearer asset" that can be directly transferred without a centralized intermediary.



**Scarcity**—By design, there is a hard cap of 21 million bitcoin that will ever be created. The blockchain record ensures that each unique bitcoin cannot be copied or double-spent.



**Durability**—Multiple copies of the blockchain record known as **nodes** act as a failsafe, maintaining the history and integrity of the data.



**Seizure-resistance**—Bitcoin is stored and secured with a **private key**. Unless the private key is shared, ownership cannot be taken or claimed by any other party.

Digital assets are speculative and highly volatile, can become illiquid at any time, and are for investors with a high risk tolerance. Investors in digital assets could lose the entire value of their investment. The price of bitcoin is volatile, and market movements of bitcoin are difficult to predict. Supply and demand changes rapidly and is affected by a variety of factors, including regulation and general economic trends. Bitcoin exchanges may suffer from operational issues, such as delayed execution. Digital asset exchanges have been closed due to fraud, failure or security breaches. Assets that reside on an exchange that shuts down or suffers a breach may be lost. Several factors may affect the price of Bitcoin, including, but not limited to: supply and demand, investors' expectations with respect to the rate of inflation, interest rates, currency exchange rates or future regulatory measures (if any) that restrict the trading of Bitcoin or the use of Bitcoin as a form of payment. There is no assurance that Bitcoin will maintain its long-term value in terms of purchasing power in the future, or that acceptance of Bitcoin payments by mainstream retail merchants and commercial businesses will continue to grow. Bitcoin is created, issued, transmitted, and stored according to protocols run by computers in the Bitcoin network. It is possible the Bitcoin protocol has undiscovered flaws which could result in the loss of some or all assets. There may also be network-scale attacks against the Bitcoin protocol, which result in the loss of some or all of assets. Advancements in quantum computing could break Bitcoin's cryptographic rules.

## How does bitcoin compare as a currency?

- Bitcoin does not represent a claim on a physical asset. But unlike government-issued fiat currencies, bitcoin is decentralized and non-sovereign, with no central authority controlling it.
- Also, unlike government-issued fiat currencies, bitcoin has a hard cap on the number of units that will ever be issued, so it cannot be devalued by simply "printing more."
- Unlike government-issued currencies, there is no physical form for bitcoin, making it potentially easier to use as a reserve currency.
- However, bitcoin is not a representative currency or a fiat currency with a government assurance backing it. Because it represents something new, we cannot be sure how its usage will evolve over time.



# Bitcoin and Digital Asset Narratives

By functioning as a robust digital currency, bitcoin and other digital assets may offer a range of potential opportunities for investors. Several different narratives have been developed as bitcoin has grown in popularity. Each narrative has distinct benefits and risks associated with it. Because bitcoin and other digital assets are so new, we cannot be certain which narratives (if any) will become most important, and what changes and risks will be encountered along the way.



## Store of Value

This is the view that assets like bitcoin can serve as a **store of value** given its fixed scarcity (due to the supply cap), unforgeability, portability, and divisibility.



## Portfolio Diversifier

This is the view that sees bitcoin and other digital assets as an uncorrelated asset with distinct return drivers over long time horizons, making it a potential portfolio diversifier relative to traditional asset classes.



## Venture Capital Bet

This is the view that bitcoin and other digital assets are like early stage startups, with the potential to disrupt existing systems and create new markets.



## Remittance Technology

This is the view that blockchain issuance of both digital-native and non-digital assets can expand access across borders, foster efficiencies, and help reduce costs.

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## Blockchain Enables Additional Types of Digital Assets

Blockchain technology allows for multiple forms of secure and auditable transactions. Investors and traders can buy and sell these assets on exchanges similar to the securities market, with the potential for gains and losses based on supply and demand.

### Types of Digital Assets

**Cryptocurrencies:** Also known as digital currencies, cryptocurrencies are digital assets issued and transferred electronically, in contrast to government-issued currencies that may exist both in physical and electronic form. The prefix “crypto” refers to the use of strong cryptographic methods to keep the currency secure and authentic. Bitcoin is included in this category.

**Stablecoins:** A class of cryptocurrencies designed to offer price stability, backed by a reserve asset. Stablecoins attempt to offer the rapid processing, security, privacy, and reduced processing fees of cryptocurrency transactions, combined with the lower volatility valuations of fiat currencies.

**Tokens:** Digital asset resources that one can own and reassign control of to somebody else. Tokens can be **asset-backed** (having direct claims on an underlying physical asset that has value) or **intrinsic-based** (not backed by an asset but representing some resource with intrinsic value).

- **Non-Fungible Tokens (NFTs)** are a specific type of token representing a unique and verifiable digital asset. These digital assets could be digital art, an online video clip, a song, or even a sound. While there may be many digital copies of the underlying object, the NFT represents the authentic and exclusive ownership of the digital asset.

Digital assets are speculative and highly volatile, can become illiquid at any time, and are for investors with a high risk tolerance. Investors in digital assets could lose the entire value of their investment. The price of bitcoin is volatile, and market movements of bitcoin are difficult to predict. Supply and demand changes rapidly and is affected by a variety of factors, including regulation and general economic trends. Bitcoin exchanges may suffer from operational issues, such as delayed execution. Digital asset exchanges have been closed due to fraud, failure or security breaches. Assets that reside on an exchange that shuts down or suffers a breach may be lost. Several factors may affect the price of Bitcoin, including, but not limited to: supply and demand, investors' expectations with respect to the rate of inflation, interest rates, currency exchange rates or future regulatory measures (if any) that restrict the trading of Bitcoin or the use of Bitcoin as a form of payment. There is no assurance that Bitcoin will maintain its long-term value in terms of purchasing power in the future, or that acceptance of Bitcoin payments by mainstream retail merchants and commercial businesses will continue to grow. Bitcoin is created, issued, transmitted, and stored according to protocols run by computers in the Bitcoin network. It is possible the Bitcoin protocol has undiscovered flaws which could result in the loss of some or all assets. There may also be network-scale attacks against the Bitcoin protocol, which result in the loss of some or all of assets. Advancements in quantum computing could break Bitcoin's cryptographic rules.



A photograph of two women, one with long dark hair and one with curly dark hair, both smiling and looking at a smartphone held by the woman on the right. The image is overlaid with a semi-transparent blue filter. A white line with circular nodes starts from the top left and extends diagonally across the image, ending near the smartphone. Two circular nodes on this line are highlighted with dashed white borders, one positioned over the smartphone and another slightly below and to the left. In the bottom left corner, there is a small yellow circular icon containing a white house symbol.

## How Bitcoin and Blockchain Work

Bitcoin and blockchain were created at the same time and have become the standard for digital assets. Understanding how they work is a good foundation for understanding all digital assets.



## Documenting Value and Ownership

Before digital assets, a recordkeeping system was developed to allow value to transfer without actual physical currency always changing hands. This system was designed to increase convenience and security, but requires centralized tracking.

For non-digital currencies, value changes ownership when a physical note changes hands. To reduce the risk of loss, society developed a system allowing physical currency to be deposited with an institution such as a bank. Historically, deposits, withdrawals, and payments were tracked in a paper **ledger**. This authenticated record of transactions allowed ownership to transfer while physical currency stayed safely locked away.

In our digital world, this ledger has become an electronic database. Typically, **databases** are maintained by an institution or group of institutions that watch over all transactions. Similar to paper ledgers in the past, digital databases must be carefully maintained and vigilantly secured from unauthorized users who could corrupt the records.



## The Evolution of Ledgers to Digital Databases

The digitization of databases allows a transfer of value without physical currency moving around. But this approach is just a new version of the paper ledger, and the underlying asset value is still tied to a fiat currency. It does not yet represent true digital assets.

As an example, consider a gift card as a vehicle for digital monetary transactions.

When a gift card is purchased, the card issuer receives payment, and the new card owner receives a unique account with the purchase value attributed to it.

When the owner uses the card to buy something, the seller must validate the transaction by contacting a database and moving value from the buyer's account to the seller's account. This database is managed by a central authority. Businesses must keep their own databases to record the transfer of value as well.

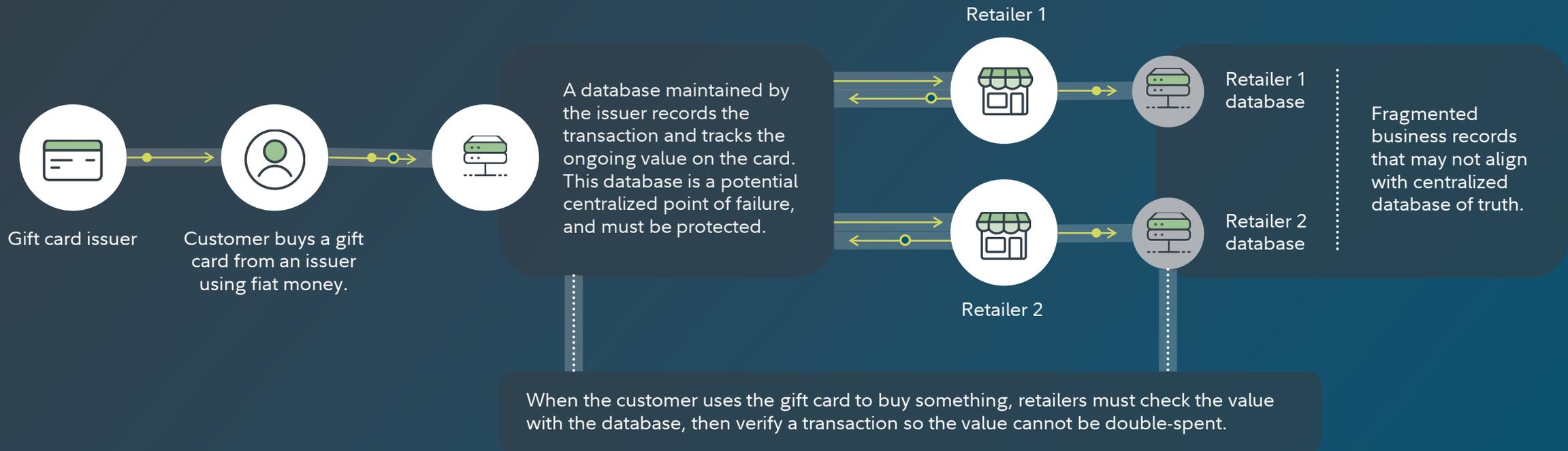
If a hacker obtains the unique code of the card or access to the database, the value in the card's account can be stolen. Database security is designed to prevent this type of theft, and regulators audit the database managers for compliance with security rules and regulations.

This process is labor-intensive and expensive to maintain. The cost is absorbed by participants who benefit from a secure and convenient way to transfer value.



# The Evolution of Ledgers to Digital Databases

Transfer of value using a gift card.



## The Revolution of Blockchain's Decentralized Ledgers

Finding a way to track, distribute, and confirm a publicly accessible, decentralized, and secure ledger has been the challenge. Blockchain has managed to solve for all of these attributes in an innovative way.

Instead of replicating the traditional ledger approach, Bitcoin and blockchain invented a technology that creates a **decentralized ledger**, which means no single person or group has control of it. For security, this database can be **distributed** (it exists across a network of computers and locations) and **public** (all participants can access and monitor the information it contains).

By design, transactions are confirmed by the entire network, which makes them less vulnerable to fraud but requires an ongoing network dedicating computing power to the task. Valid transactions are then entered into **blocks** of data. All copies of the ledger are updated, and full blocks are **chained** together to form a permanent history. Because the database is broadly distributed and duplicated, a user cannot change the record by breaking into one database.

Blockchain technology could be used to reduce the friction and increase the security of transactions using fiat currency. Blockchain can enable a secure and portable store of intrinsic value that does not need to be backed by a fiat currency at all. The first robust digital currency, bitcoin, was developed simultaneously with this innovative technology.



Bitcoin exchanges may suffer from operational issues, such as delayed execution. Digital asset exchanges have been closed due to fraud, failure or security breaches. Assets that reside on an exchange that shuts down or suffers a breach may be lost.

## Blockchain Makes Fully Digital Value Possible

When assets are fully digital and decentralized, transactions no longer require a centralized ledger to maintain accuracy and security.

Consider how a bitcoin transaction differs from the gift card purchase described on pages 14–15.

When a buyer uses bitcoin to pay for something, instead of checking a central database for a stored value, the seller broadcasts the transaction to the entire network. The network verifies the buyer's ownership and validates the transaction using a process known as mining. It then writes the time-stamped transaction into every copy of the block, maintaining an unbroken chain of transactions and owners from when the bitcoin was created to the present.

If the Bitcoin protocol operates as expected, the record is tamper proof because any variation would need to modify the record in numerous locations at the same time—and the distributed network would notice this alteration taking place.

Unlike with the gift card, a transfer of value can take place without a central authority overseeing it, thanks to the decentralized ledger.

One disadvantage is that this decentralization currently requires an energy-intensive process, and may not be as convenient or fast as a centralized transfer of value. Some advocates believe the cost and delay of digital asset transactions will diminish over time thanks to technology improvements, encouraging wider usage without sacrificing security and decentralization. However, those changes are still uncertain.

Several factors may affect the price of Bitcoin, including, but not limited to: supply and demand, investors' expectations with respect to the rate of inflation, interest rates, currency exchange rates or future regulatory measures (if any) that restrict the trading of Bitcoin or the use of Bitcoin as a form of payment. There is no assurance that Bitcoin will maintain its long-term value in terms of purchasing power in the future, or that acceptance of Bitcoin payments by mainstream retail merchants and commercial businesses will continue to grow. Bitcoin is created, issued, transmitted, and stored according to protocols run by computers in the Bitcoin network. It is possible the Bitcoin protocol has undiscovered flaws which could result in the loss of some or all assets. There may also be network-scale attacks against the Bitcoin protocol, which result in the loss of some or all of assets. Advancements in quantum computing could break Bitcoin's cryptographic rules.

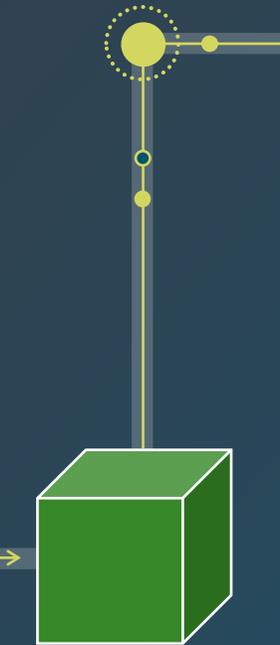


# The Blockchain Process

Transfer of value using blockchain.



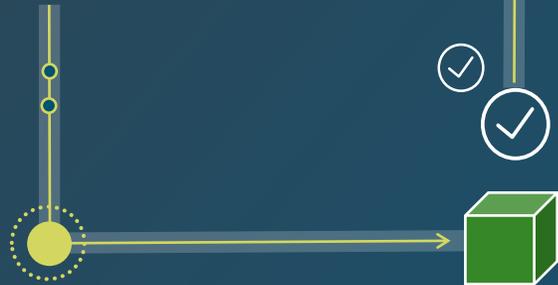
A wants to send money to B.



The transactions is grouped with others to form a "block."



The block is broadcast to the network and queued for verification through a consensus mechanism.



Transactions are verified through a consensus mechanism (most commonly, mining).



The block then can be added to the chain, which provides an indelible and transparent record of transactions.



The money moves from A to B.





# The Digital Assets Ecosystem

Digital assets have the potential to reshape the financial services industry. As the underlying technologies have grown in adoption, an ecosystem of supporting companies and organizations has developed to support current operations and foster ongoing innovation.



## Building a Fully Digital Financial System

The development of blockchain and Bitcoin has inspired the formation of a built-out financial system to support them. Mechanisms for issuance, transfer, and custody of digital assets are core components of that system. Remember that bitcoin is not a fiat currency, so these comparisons are to help with understanding how this one specific digital asset works, but are not meant to be exact or applied to all digital assets.

Component	Function	U.S. Dollar (fiat)	Bitcoin (digital)
Issuance	Creation of new assets	Federal Reserve System and U.S. Treasury Department (mints)	Miners (via protocol & rules of the network)
Transfer	Remittance or trading of assets	Physical currency, commercial banking system	Wallet (via peer-to-peer transfer on the network)
Custody	Secure storage of assets	Federal Reserve Banks, commercial banking system	Self-Custody Wallet or Custodian*



\* Self-custody wallets can use different configurations of software and hardware; custodians use software/hardware wallets for underlying custody and various additional operational and security procedures.

## Issuance of Digital Assets

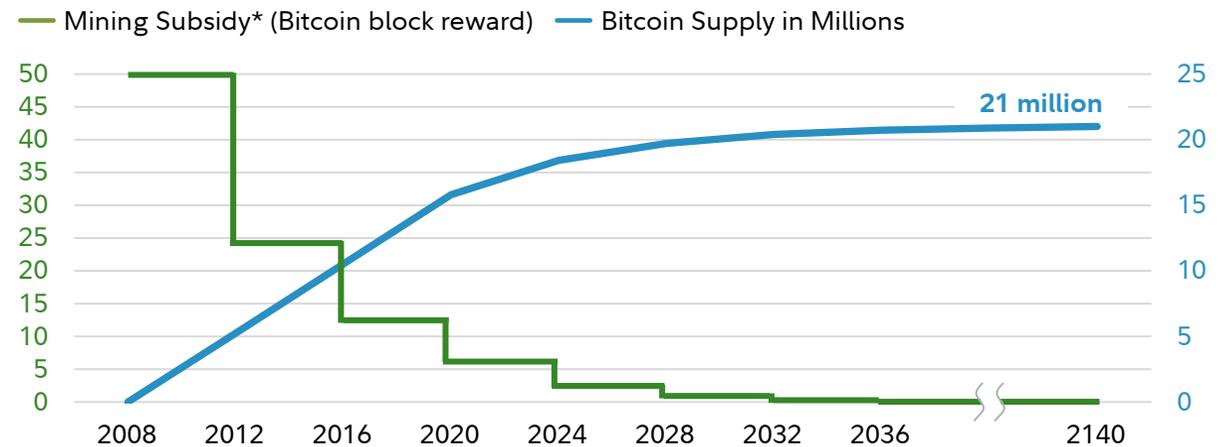
New transactions on the blockchain network must be verified and then recorded. For Bitcoin, computers known as **miners** complete this task. To incentivize decentralized participants to dedicate computing power to the network, miners can earn a reward of newly created bitcoin plus transaction fees. Miners replace centralized ledgers by verifying transactions and the state of the network. They also replace the Federal Reserve and the banking system as the source of new currency (until the cap is reached).

When a new transaction must be verified, miners complete this task by competing to solve a complex math problem. This competition is energy intensive and creates a cost layer to the economic incentive of being awarded newly minted bitcoin.

The miner that first solves the problem earns the reward. All others then record the transaction across the distributed bitcoin network. The reward, known as a "block reward" is the payment for maintaining the network.

The new issuance rate (the size of the mining subsidy) drops over time according to a preset plan written into the Bitcoin protocol source code. This controls the supply and avoids flooding the network with bitcoin. Eventually, the amount of bitcoin will reach its cap of 21 million, and miners will earn only transaction fees (approximately in the year 2140).

### Bitcoin Supply and Mining Subsidy



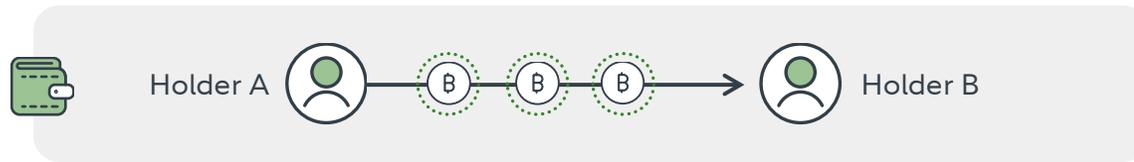
Estimates based on Bitcoin protocols and Fidelity analysis, as of August 2021.

\* Mining reward halves approximately every four years until reaching zero in 2140.



## Transferring Value with Digital Assets

After a bitcoin has been issued, it can be transferred to other parties. A bitcoin **wallet** is the software that can receive and send value, monitor the owner's balance, and keep track of transactions. **Exchanges** facilitate the purchase, sale, and trading of digital assets.



**Wallets** allow for the exchange of bitcoin from one holder to another. Unlike a bank account, a wallet can be controlled by the asset holder, and transfers do not require action from a central intermediary (such as a bank).

Wallets use a private key and a public key to interact securely with the blockchain. The private key is like your email account password, while the public key is more like your email address. You need your password AND your address to send an email, but someone else only needs your address to send an email to you. Similarly, you need your private and public keys to store assets and transfer them out, but others can send assets to you using only a public key.

Like printed cash, bitcoin is a "bearer instrument": the individual that holds the private key holds possession of the bitcoin. Losing the private key means losing the asset, and there is no centralized intermediary who can reverse a transfer.



**Exchanges** are third-party platforms that allow buyers and sellers to trade digital assets. Some exchanges focus on specific cryptocurrencies while others enable trading between multiple cryptocurrencies or different types of digital assets.

Exchanges also make possible the use of fiat currencies to purchase digital assets.

Exchanges are centralized services that bring together market participants and simplify the process of transferring assets. They typically charge transaction fees for that service.



## Custody of Digital Assets

The **wallet** also manages the ongoing storage of digital assets. A wallet needs a network connection for transactions but can be either online or offline when just used for storage. **Custodians** help manage storage for investors and exchanges.

When storing digital assets and not transacting, an owner's wallet may or may not be connected to the internet.

**Hot wallets** are always connected to the internet and can be accessed through a computer, phone, or tablet by anyone with the private key.

- While convenient, a hot wallet is theoretically not as secure as a cold wallet. But a user still needs the private key to gain access.

**Cold wallets** are storage mechanisms where assets are kept in secure digital locations that are not connected to the Internet (such as a flash drive or an isolated computer).

- Cold wallets are very secure but inconvenient for transferring assets, because they must first be reconnected to the network.

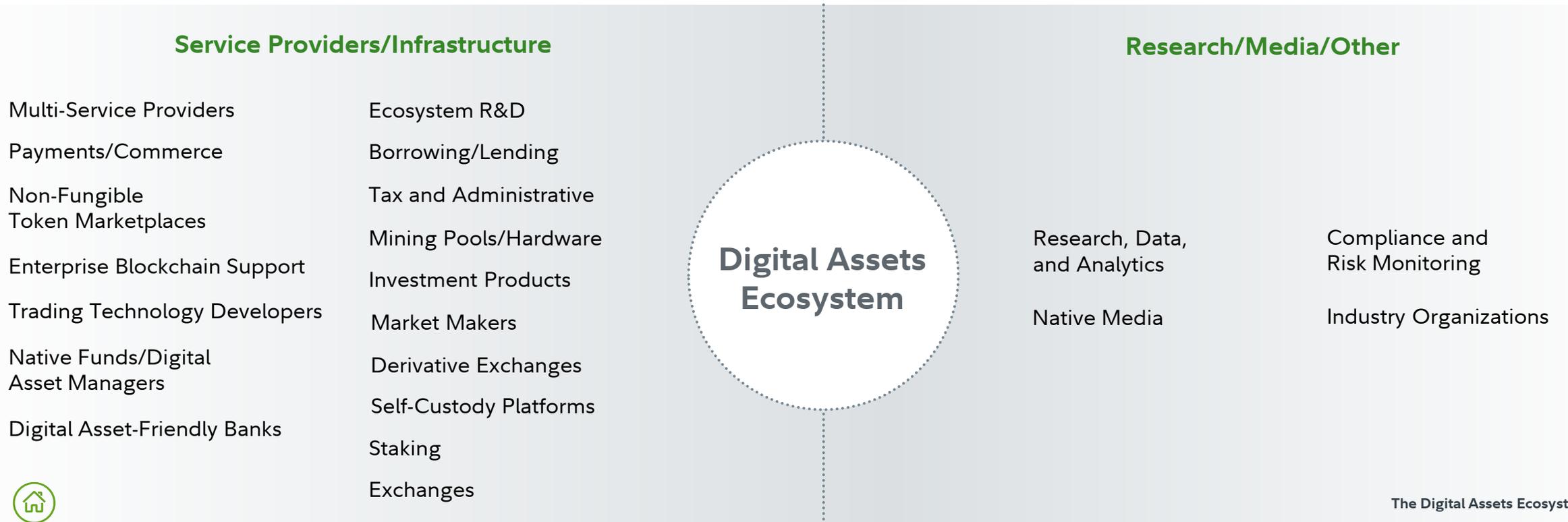
**Custodians** are independent third parties that specialize in storage and protection of wallets and their security keys.

- Custodians reduce the risk that an asset owner will lose the private key and be locked out from the assets.
- This approach eliminates the anonymity of peer-to-peer transactions, but the custodian can provide additional protection from stored assets being stolen.
- Many custodians use a mix of cold wallets for storage and hot wallets for liquidity, to offer clients both security and convenience.
- Because the owner relies on the custodian to protect and manage private keys, full trust in a custodian is very important.



# The Expanding Digital Assets Ecosystem

Bitcoin has demonstrated that digital assets can create a robust currency and build a foundational financial system around it. As more participants explore the potential of this innovative technology, a digital assets ecosystem has been extending the capabilities of Bitcoin, blockchain, and digital assets in general. In addition to the numerous currency platforms there are other areas to be aware of and explore.



## Digital Assets Ecosystem: A Glossary

**Block Explorers:** Similar to internet browsers, these companies facilitate searching blockchains for inquiries or specific transactions, helping to keep the system transparent.

**Borrowing/Lending:** Companies that provide retail and institutional customers with loans collateralized by digital assets or interest for pledging digital assets as collateral.

**Compliance and Risk Monitoring:** Firms providing blockchain forensic data, research, and risk management tools to institutions and governments to combat crime and provide safety.

**Digital Asset-Friendly Banks:** Banks that support digital assets and potentially offer integrated payment processing services to handle various forms of settlement.

**Derivative Exchanges:** Businesses that allow retail and institutional customers to trade non-delivered futures and options of digital assets.

**Enterprise Blockchain:** Businesses that are leveraging proprietary blockchain platforms to enable institutions to share complex data and logic with a single source of truth and no central counterparty.

**Exchanges:** Businesses that allow retail and institutional customers to trade digital assets through a central limit order book.

**Ecosystem R&D:** Research and development of protocols/feature upgrades for digital assets.

**Industry Organizations:** Cryptocurrency-focused groups providing research and advocacy centered on public policy issues regarding digital assets and decentralized finance.

**Institutional services:** As more investment advisors, family offices, mutual funds, pensions and endowments, and even corporate treasuries use digital assets, institutional-quality service providers help clients manage storage and transactions. **Institutional custody, compliance and risk monitoring, and data/analytics services** are examples.

**Investment Products (public):** Publicly available products providing exposure to digital assets through various structures, such as trusts and funds.



## Digital Assets Ecosystem: A Glossary

**Mining Pools/Hardware:** Miners acquire specific computers that they host in data centers to approve transactions and secure the integrity of any Proof of Work blockchain (e.g. Bitcoin) for which the miner receives the digital asset as reward.

**Multi-Service Providers:** Institutional-grade companies that aim to offer clients a one-stop shop for interacting with digital assets. This typically includes services such as trade execution and custody alongside a growing list of other capabilities.

**Native Funds/Asset Managers:** Digital asset fund managers aim to provide high risk-adjusted returns by making investments in the digital asset space via equity and/or digital assets directly.

**Native Media:** News and content providers focusing on digital assets.

**Payments/Commerce:** Firms that enable retail customers to leverage digital assets as a means of exchange for other traditional goods and services.

**Research, Data, and Analytics:** Online services providing data insights, pricing, research, and analytics on the digital asset ecosystem.

**Self-Custody:** Signifies that you have sole possession of your digital assets by holding/controlling your private key. Hardware wallet providers supply physical devices that store private keys.

**Staking:** Staking service providers offer an easy way to interact with decentralized finance protocols by helping users stake and earn yield on their assets.

**Tax and Admin:** Companies operating in the tax and administrative space are working to simplify the ambiguity with digital assets and integrate with traditional systems and regulators

**Trading Technology:** Execution, connectivity, and settlement infrastructure for digital assets.



# Future Uses of Blockchain

The possible uses of blockchain technology are wide open, and we are still in the early stages of realizing its potential. Many types of transactions and information-sharing could benefit from a secure, decentralized method of verification and exchange.



**"Smart Contracts"** could further support decentralized finance or **"de-fi"** interactions, allowing for transactions to be executed securely and privately with no intermediary, reducing cost to the participants.

Government



**Decentralized medical records** could allow multiple health care providers to securely share patient information across different systems, reducing the compliance costs and increasing the efficiency of information flow.



Cross-border transactions



Businesses with multiple locations could share **supply chain management** information and update it in all locations at the same time, maintaining a single authoritative version of the data.



**Insurance companies** can have secure ledgers that track underwritten items with time-stamped event-specific updates, reducing the administrative costs associated with documenting claims.



As **Internet of Things (IoT)** technology evolves, blockchain technology could help thousands of interconnected devices identify themselves properly and create secure networks across different protocols.





# Getting Started with Digital Assets

With interest in digital assets likely to continue growing—and the whole area rapidly evolving—advisory and wealth management firms may benefit from building familiarity with this new asset class. In particular, advisors may want to have an informed view of the past, present, and potential future of this innovative new financial instrument.



# Getting Started with Digital Assets

There are three steps to consider toward integrating digital assets into your business.

## ① Educate Yourself

- ✓ Continue to build your understanding of blockchain and digital asset technology.
- ✓ Identify existing and developing applications of blockchain within the financial advisory industry.
- ✓ Explore industry organizations that can help you stay informed. Examples include:
  - The Digital Assets Council of Finance Professionals
  - The Chamber of Digital Commerce
  - The Crypto Council for Innovation
  - The Association for Digital Asset Markets

## ② Form Your Thesis

- ✓ Research the asset landscape and understand how digital assets may be a fit in your clients' portfolios.
- ✓ Identify where digital assets or companies in the digital assets ecosystem may fit with your strategy of broader alternative assets, such as commodities, venture investments, etc.
- ✓ Understand the distinct risks of digital assets, including price volatility and operational complexity that might be greater than or different from the other types of investments you are used to.
- ✓ Establish a long-term thesis on the broader asset class that you can monitor and adapt—it is still new and evolving.

## ③ Operationalize

- ✓ Identify the necessary service and technology providers for your business to adopt digital assets.
- ✓ Consult your related compliance department or colleagues to understand the regulatory implications of participating in this asset class.
- ✓ Compare the pros and cons of various ways to invest, whether directly in digital assets, through investment products, or in companies that hold digital assets.
- ✓ Prioritize security and custody as a fundamental consideration for participation.



To learn more about how Fidelity can help you explore the possibilities of digital assets, contact your Fidelity representative.



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The 2021 Institutional Investor Digital Assets Survey was a blind survey executed in association with Coalition Greenwich on behalf of Fidelity Digital Assets<sup>SM</sup> and the Fidelity Center for Applied Technology between December 2, 2020, and April 2, 2021.

The survey included 1,100 institutional investors in the U.S. (408), Europe (393), and Asia (299), including high-net-worth investors, family offices, digital and traditional hedge funds, institutional investors, financial advisors, and endowments and foundations.

The 2021 Trends in Investing Survey was conducted by the *Journal of Financial Planning* and the Financial Planning Association<sup>®</sup> (FPA<sup>®</sup>), and supported by Onramp Invest. The survey was fielded in March 2021 and received 529 online responses from financial advisors who offer clients investment advice and/or implement investment recommendations.

**For institutional investors and investment professionals.**

This presentation is for informational purposes only and is not intended to constitute a recommendation, investment advice of any kind, or an offer to buy or sell securities or other assets. Please perform your own research and consult a qualified advisor to see if digital assets are an appropriate investment option.

Investment decisions should be based on an individual's own goals, time horizon, and tolerance for risk. Nothing in this content should be considered to be legal or tax advice, and you are encouraged to consult your own lawyer, accountant, or other advisor before making any financial decision.

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Digital assets are speculative and highly volatile, can become illiquid at any time, and are for investors with a high risk tolerance. Investors in digital assets could lose the entire value of their investment.

The price of bitcoin is volatile, and market movements of bitcoin are difficult to predict. Supply and demand changes rapidly and is affected by a variety of factors, including regulation and general economic trends.

Bitcoin exchanges may suffer from operational issues, such as delayed execution. Digital asset exchanges have been closed due to fraud, failure or security breaches. Assets that reside on an exchange that shuts down or suffers a breach may be lost.

Several factors may affect the price of Bitcoin, including, but not limited to: supply and demand, investors' expectations with respect to the rate of inflation, interest rates, currency exchange rates or future regulatory measures (if any) that restrict the trading of Bitcoin or the use of Bitcoin as a form of payment. There is no assurance that Bitcoin will maintain its long-term value in terms of purchasing power in the future, or that acceptance of Bitcoin payments by mainstream retail merchants and commercial businesses will continue to grow. Bitcoin is created, issued, transmitted, and stored according to protocols run by computers in the Bitcoin network. It is possible the Bitcoin protocol has undiscovered flaws which could result in the loss of some or all assets. There may also be network-scale attacks against the Bitcoin protocol, which result in the loss of some or all of assets. Advancements in quantum computing could break Bitcoin's cryptographic rules.

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