

## **BITS, BYTES, AND THE BLOCKCHAIN: AN OVERVIEW OF BITCOIN**



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## Executive Summary

Once regarded as part of a libertarian fringe, Bitcoin is increasingly commanding the attention of the world's major financial institutions, institutional investors, and governmental regulatory bodies. Current estimates put the amount of Bitcoin outstanding at \$14.2 million. Though this is tiny relative to other asset classes such as stocks, bonds, and physical currencies, proponents and, increasingly major financial institutions, believe Bitcoin has a major role to play in enabling not only consumer retail payments and a wide range of institutional financial transactions, but all sorts of legal and other routine applications as well.

We review the current state of play while discussing key risks (including regulatory and technological hurdles), and share our insights on accounting treatment and tax compliance. We also highlight EGFS clients who operate in this space as well as some of the major companies at the forefront of the industry.

Though Bitcoin presents significant growth opportunities, we believe they are most likely to be realized in related applications that utilize its innovative decentralized ledger rather than through its acceptance as a bonafide currency.

Some developments we will be monitoring:

- The emerging regulatory framework: will this feature multinational cooperation as with the approach to the Internet or based on competition?
- What alternatives could emerge as viable threats/successors?
- How its senior developers move to address security concerns
- Price volatility and volume of transactions



*"Can you believe he actually thinks that I am really alive?" - Everclear*

## **Bitcoin: What it is**

Bitcoin is an electronic medium of exchange that exists via decentralized, open-source software operating on peer-to-peer networks. To its boosters, it is a currency that will one day usurp, or in the favored industry parlance, "disrupt" large segments of the traditional financial services industry including routine retail transactions, electronic payments, securities trading, cross-border funds transfers, and trade settlements, to name some of the most obvious applications.

To skeptics, it's little more than a niche product that lacks credibility and is too volatile to ever catch on with more than a limited audience or in certain specific applications and market segments.

To the IRS, Bitcoin is "property," to financial regulators it is potentially a commodity, and for some it is, in some contexts, money.

Here's what a few experts say:

*[Bitcoin is] "software that allow for a monetary system to operate that allows people to send values and trade online digitally...w/out the need for an intermediary" -- Paul Vigna*

*"Bitcoin is a payment innovation that's taking place outside the banking industry. To the best of my knowledge there's no intersection at all, in any way, between Bitcoin and banks that the Federal Reserve has the ability to supervise and regulate." -- Janet Yellen*

*[Bitcoin is] "a technology advance that could become an important "medium for exchange and a mechanism for recording information." -- Blythe Masters, CEO Digital Asset holdings*



*"an electronic payment system based on cryptographic proof instead of trust, allowing any two willing parties to transact directly with each other without the need for a trusted third party." -- Satoshi Nakamoto*

## **Background on Bitcoin**

While its origins are somewhat murky, the general consensus is that someone or some group using the name Satoshi Nakamoto launched Bitcoin in the waning days of 2008. Essentially Bitcoin is a cashless "currency" that is traded via peer-to-peer networks with every transaction recorded on a blockchain. This blockchain functions as a giant electronic ledger: recording every transaction in Bitcoin, wherever it takes place. Its purpose is to prevent duplicate payments being made with the same Bitcoin, or counterfeiting attempts, and to verify transactions. Recent figures put the amount of Bitcoin currently outstanding at \$14.2 million. Bitcoin recently traded in the \$226 range. This translates into a market capitalization of \$3.2 billion.

## **Mechanism**

How does this work? The Economist gives a great overview complete with graphics in its piece: [How do bitcoin transactions work?](#) Transactions made in Bitcoin are encrypted and take place by means of an exchange of keys (one public and one private) which are typically maintained in private electronic "wallets." In this way, personal details are not exchanged or revealed to transactors or third parties. Though individual identities are not revealed, every transaction is posted to the blockchain.

Responsibility for the software that underpins the blockchain's integrity lies with a team of five core developers, with Gavin Andresen, the most senior, now the public face of Bitcoin. Meanwhile a network of individuals/entities known as "miners" competes to verify the accuracy of and record each transaction, encoding it in the blockchain, in return for payment in newly minted Bitcoin.



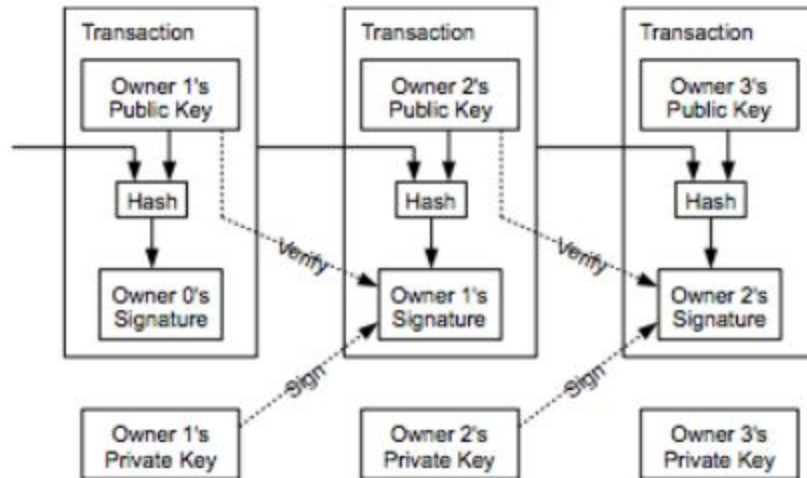


Image credit: Bitcoin: A Peer-to-Peer Electronic Cash System

## What's different about Bitcoin?

- Bitcoin is radically different from existing currencies in that there is no centralized authority to oversee and/or constrain usage
- Bitcoin exists solely electronically. There is no central repository of Bitcoin reserves.
- There is a finite supply: the amount of Bitcoin that can be in circulation at any one time is capped at 21 million.
- Bitcoin is not backed by government mandate as fiat currencies are, nor is it backed by physical assets such as gold

## Industry structure

So how is Bitcoin governed? And who's responsible for software changes?



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In keeping with its ethos of being a decentralized and unregulated alternative to existing currencies, there is no regulatory body overseeing and enforcing Bitcoin standards. Instead, a cadre of five senior developers proposes changes. The catch is that a critical 51% majority of the Bitcoin ecosystem must go along in order for the changes to stick. If that doesn't happen, the developers can either change course, or a "fork" occurs: with one contingent accepting and operating by the new rules -- thereby creating a new electronic ledger -- and another continuing to use the original blockchain.

Once the proportion of acceptors reaches 51% though, that blockchain becomes the standard.

## **Regulatory front**

*Someone once told me, 'it's not the fall that kills you. It's the sudden change in direction. --Peter deMenocal*

For all the certitude in some quarters that a new era of Bitcoin preeminence is coming and despite its increasing acceptance, a number of risks remain. For one thing, government actions are a wildcard.

In the U.S., a number of federal agencies are involved or potentially could be in the regulation of Bitcoin or in responding to complaints involving it. These include: the U.S. Treasury Department, the Securities And Exchange Commission (SEC), the Consumer Financial Protection Bureau (CFPB), The Federal Reserve, the Department of Homeland Security, the Conference of State Banking Supervisors (CSBS), and the Commodity & Futures Trade Commission (CFTC).

In the E.U. and in the U.K., the latter of which has taken the lead on reviewing Bitcoin and assessing the need for new regulations, implicated agencies include the European Central Bank (ECB), HM Treasury, the Bank of England (BOE), and the U.K. Financial Conduct Authority (FCA).

New York state, which recently granted the first license to a Bitcoin exchange, itBit, was also the first U.S. state to release a regulatory framework and outline new



rules that are likely to provide the benchmark for other states. Key provisions include:

1. Companies that transact in virtual currency for customers must apply for licenses including undergoing background checks
2. They will be subject to minimum capital requirements
3. Licensees must maintain funds with a custodian to guarantee customer accounts
4. Holders must meet recordkeeping requirements including maintaining accounting and general ledgers and financial statements, bank statements, reconciliation documents, and valuation reports
5. Licensed operators must conduct anti-money laundering (AML) activities including reporting transactions, monitoring for suspicious activities, and filing Suspicious Activity Reports (SARs)
6. Licensees must conduct due diligence on foreign account holders including verifying the identities for holders of accounts above a \$3,000 threshold
7. They are required to "establish and maintain an effective cyber security program to ensure the availability and functionality of the Licensee's electronic systems and to protect those systems and any sensitive data stored on those systems."

For its part, the U.K. Treasury, after soliciting comments from various industry stakeholders, announced in its report summarizing initial feedback on key issues concerning [digital currencies](#) plans to release "a package of measures to address key crime and consumer protection risks associated with digital currencies." "These measures are intended to create the right environment for legitimate actors to flourish" this fall. Its actions will be focus on increasing competition in the banking industry and encouraging financial innovation.

Interestingly, among other initiatives outlined, it will fund research into fintech innovation, work with the financial industry's existing regulator, FCA, on ways to encourage and support the industry's growth. But safeguarding consumer interests will be by means of a voluntary rules of the road proposed by industry participants.

## **Accounting and Tax Issues**

*Accounting for Bitcoin investments:*



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The IRS released guidance last year on the tax treatment of Bitcoin. The main points are as follows:

- It considers Bitcoin to be property rather than a currency since it is not legal tender
- Bitcoin held as an investment should be accounted for as a capital asset -- making profits from fluctuations in value subject to capital gains taxes
- Holders, whether businesses or individuals, must run gains and losses through their income statements and record transactions at their fair market value (FMV). This means they also must keep track of their cost basis, as is the case with investment securities or property such as homes.
- FMV, of a purchase, sale, receipt of income, or disbursement of expense, is calculated as the U.S. dollar value at which it is listed on an exchange provided the exchange "is established by market supply and demand." (If no exchange rate is captured at the time of the transaction, as is the case with bitcoin receipt or disbursement, historical exchange rates are available from exchange service providers or third-party exchange rate services.)

## **Tax Compliance**

For tax reporting, companies must treat Bitcoin as inventory. The need to account for gains and losses means that businesses must be scrupulous about recording every transaction including purchase dates, costs, dates of sale, and selling prices (the initial price serves as the cost basis for calculating subsequent gains and losses). Capital gains taxes apply to gains and losses may be used to offset gains as is the case with other capital assets. Companies that hold Bitcoin accounts for customers can choose to mark the assets to market, recording fluctuations in value on their balance sheets, or treat them as inventory.

The fact that transactions often occur in fractions of Bitcoin adds an additional layer of complexity. Other challenges are Bitcoin's price volatility and the absence of a central exchange setting widely accepted rates. In the absence of a central exchange, some participants use an [average of rates across exchanges](#) or look at an exchange's relative volume in calculating FMV.





For payments made in Bitcoin, whether to employees or contractors, if the amount is greater than \$600, employers face the same reporting and filing requirements as with physical currencies: namely to report and provide W-2s and 1099s.

Payments are also subject to withholding just as with other forms of income. Similarly receivers of Bitcoin payments for services rendered, whether employee, contractors, or miners, must report their earnings on their tax statements.

### **What accounting and financial reporting issues are we seeing with Bitcoin businesses?**

Given that virtual currencies are so new, most businesses, whether Bitcoin-based or occasional transactors, lack the in-house expertise and resources to successfully manage the substantial documentation, reporting, and accounting requirements. As a result, they often:

- Fail to establish effective and transparent tracking systems that would enable them to easily extract necessary data for effective financial reporting
- Fail to track transaction prices making it a nightmare to calculate cost basis -- and potentially increasing the risk of an audit.

That said, compared to other industry participants, wallet providers are generally better positioned in terms of reporting than Bitcoin companies in other industry segments are.

For the moment, Bitcoin transactions don't generate the kind of detailed documentation that is commonplace for other types of complex financial transactions, such as investment or trading reports.

In the absence of regulatory guidance and the deep financial expertise the industry lacks, we believe many business owners continue to underestimate the time, costs, and organization required to accomplish this, resulting in sizable and unnecessary expense and time lost in recreating transaction flows down the line. Turning to service providers to help solve the basis tracking and tax reporting requirements is an obvious answer.

As with many things, it is much cheaper and easier to accomplish this by planning ahead and working with trusted accounting, tax, and banking partners to ensure



in-house systems and processes are set up properly. At a minimum, Bitcoin-based businesses should record and categorize their transaction flows and costs in a format that will allow them to easily generate reports.

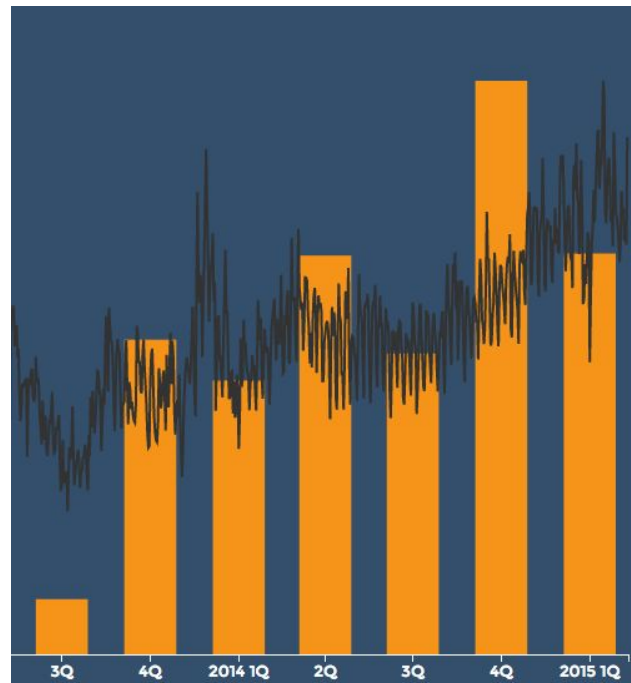


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## State of Play: Bitcoin Startups And Funding Landscape

AngelList counts 711 Bitcoin related startups in its database. Below are some of the more prominent names in the space: a number of whom are EGFS clients. Year to date, investment in the space remains on an uptrend as shown in these [Coindesk Venture Capital](#) statistics. Coindesk puts the amount of VC funding for Bitcoin companies at \$433 million in 2014.

Similarly, as depicted in the adjoining chart, PitchBook data reveals that investment in Bitcoin companies has trended upwards even as it has periodically fallen along with Bitcoin's trading price.



Source: PitchBook "Bet on Bitcoin"

[Align Commerce](#) -- Provides cross-border transaction processing to facilitate payments in local currency. Investors include: Bitcoin Opportunity Corp, Boost VC, Fenway Summer, Pantera Capital.

[BitPay](#) -- Payment processor enabling merchants to accept payment in Bitcoin. Investors include: Founders Fund, Felicis Ventures, Index Ventures, Horizons Ventures, Jerry Yang.

[BlockCypher](#) -- Provides cloud-based software for blockchain services. Boost VC alum. Investors include: Granite Ventures, Blockchain capital. (EGFS client)

[Bolt Financial](#) -- Provides Bitcoin wallet services to facilitate payments. (EGFS client)



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[Circle](#) -- Provides merchant services enabling payments, funds storage and facilitates deposit-taking. Investors include: Accel Partners, Goldman Sachs, Breyer Capital, General Catalyst Partners, and Oak Investment Partners, Accel Partners.

[CoinBase](#) -- Offers digital wallets that enable transactions between merchants and customers. Investors: New York Stock Exchange, BBVA.

[CoinDesk](#) -- Provides news, pricing, and other information on digital currencies.

[Digital Asset Partners](#) -- Software platform for trade settlement of digital and financial assets via the blockchain.

[HashRabbit](#) -- Provides software to enhance security of Bitcoin miners; Boost VC alum. Investors: Draper Associates, Vegas Tech Fund. (EGFS client)

[Libra](#) -- Provides a suite of accounting, compliance, and reporting solutions for distributed public ledger users, transactors, and businesses. Investors: Liberty City Ventures. (EGFS client)

[Ripple Labs](#) -- Developed Ripple protocol software, digital currency alternative to Bitcoin, that enables free and instant payments. Investors include: Route 66 Ventures, Google Venture and Andreessen Horowitz.

[SNAPCARD](#) -- Provides payment processing services that facilitate spending in Bitcoin and other digital currencies. Boost VC alum. Investors include: Crypto Currency Partners, InSikt Ventures, Great Oaks Venture Capital, Boost VC. (EGFS client - [view the client case study](#))

[Vaurum Labs](#) -- Provides software that enables brokerages to engage in trading Bitcoin for clients. Boost VC alum. Investors include: Battery Ventures, Crosslink Capital, 6 Route Sixty-Six Ventures, RRE Ventures, Draper Associates. (EGFS client)

[Xapo](#) -- Provides and stores Bitcoin wallets for businesses and financial institutions; provides exchange services. Investors include: Jerry Yang, Fortress, Benchmark, Greylock Partners.



## Conclusion

### Increasing Acceptance, With Remaining Uncertainty

*There are known knowns. These are things we know that we know. There are known unknowns. That is to say, there are things that we know we don't know. But there are also unknown unknowns. There are things we don't know we don't know. -- Donald Rumsfeld*

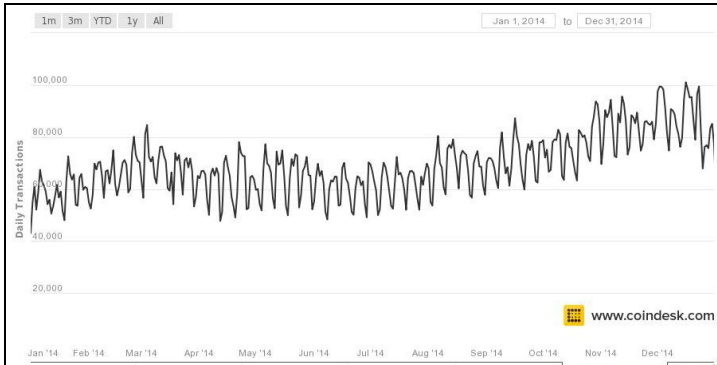
A growing number of financial firms are investing in and partnering with Bitcoin companies and researching ways to incorporate the blockchain into the existing financial system to enhance security, increase transaction speeds, and drive down costs. Meanwhile more retailers are embracing or at least accepting Bitcoin. Some governments seem to be open to letting it develop. And of course there remains a core of evangelists and early movers, but there is no sign yet of how great a potential Bitcoin holds for widespread adoption by the wider public. A scenario which we see a low probability of occurring.

Additionally, the future path for Bitcoin depends on how some of these known unknowns get resolved. Namely:

#### *Can Bitcoin scale?*

The daily number of Bitcoin transactions has ranged from 50,000 to 120,000 YTD, up from 40,000 to 82,000 during 2014. Average transaction volume on a USD basis reached a high of \$268,000,000 in 2013 and has been at a more consistent range of \$48 million to \$85 million over the past year. Compare this with typical average daily volume for widely used currencies or commodities and you have some sense of the difference in scale. Though from a technical perspective, the software has the ability to scale (and lead developer Andresen offered his estimates of the outer bounds in a 2014 blog post [A Scalability Roadmap](#)), given the need to reach consensus on software changes, how efficiently and seamlessly [can the Blockchain increase?](#)



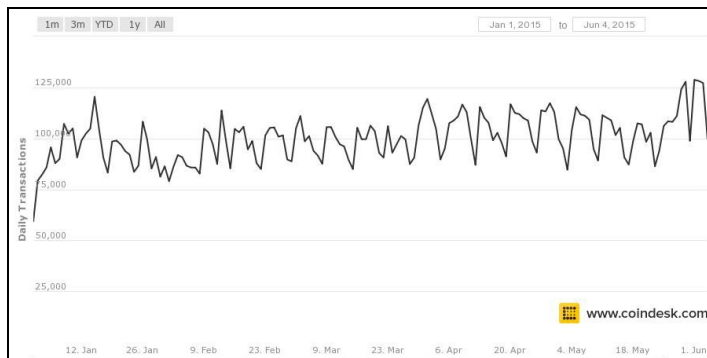


In terms of transactions, with current constraints, the blockchain can process 70,000 transactions per day at a fraction of the costs that is typical since there are no middlemen to extract fees. That said, this is a tiny fraction of the number of the daily transactions PayPal and Visa process.

Source: CoinDesk Bitcoin Historical Price Data

*How will governance issues be addressed?*

These take a number of forms from: how long can major technology changes continue to be handled via consensus; to what safeguards need to be put in place to entice greater consumer acceptance and who takes the lead/bears accountability for them; to how monitoring of exchanges and miners, and preventing illicit transactions are managed and the role of governments and multilateral institutions.



*Is the concentration of miners a risk?*

Though to date, security failures and theft of Bitcoin have been due to failures of Bitcoin counterparties to adequately secure their systems (i.e. thefts of Bitcoin



wallets), there have been instances of a mining group briefly breaching the 50% threshold. Though these quickly resolved themselves, could a rogue group eventually gain control of the blockchain and manipulate the market?

Industry groups maintain that such a situation would be quickly self-correcting but don't specify how exactly. In a report outlining risks, the Bitcoin Foundation recommendations consists of this: "Make sure the mining protocols and the economics of mining prevent these outcomes" plus measurement of mining groups and concentration. The recommendation for safeguarding against attacks on nodes is similarly lacking in detail.

*What is Bitcoin's "killer app?" or is it a "solution in search of a problem"*

Very few experts and financial practitioners believe that Bitcoin will develop into a full-fledged, though virtual, currency that would be considered alongside legal tender currencies. Many believe that in terms of its function as a currency, the use case lies in countries with unreliable financial systems which lack sufficient financial controls, and/or with a large proportion of black-market transactions and high levels of inflation, rather than in fully-developed, stable economies.

From a consumer perspective, while being able to make purchases using Bitcoin may appeal to some early adopters, the process of settlement for online purchases is pretty seamless to consumers now, with fees typically bundled into prices. So it is not clear what the incentive to switch to Bitcoin for these types of transactions is.

On the other hand, on the consumer front, the ability to make wireless transfers at greatly reduced costs and in shorter timeframes would be a big boon. Particularly given the scale of overseas remittances by emigrants, this could have material stimulative effects on developing economies -- provided that Bitcoin retains its cost-advantage as it scales.

Many experts are excited however, by the potential for Bitcoin to disintermediate routine financial transactions such as cross-border payments and trade settlements -- streamlining and reducing costs, facilitating legal and financial contracts that require signatures, and for it to serve as platform for trading and investing activities.



With the caveat that it's simply too soon to rule out unknown unknowns whether they be [Bitcoin alternatives](#) or something else, we view the technology underlying Bitcoin as presenting tremendous opportunities for those businesses and founders that can successfully partner with mainstream institutions to develop applications and solutions that use the blockchain to reconfigure how the existing financial system operates. [Nasdaq OMX's exploration of using blockchain technology](#) to facilitate trading stakes in private companies is just one example.



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We get small businesses. We understand your challenges—and we can help.

With our full suite of outsourced financial services, from outsourced CFOs to day-to-day blocking and tackling accounting, to strategic finance, tax compliance, and 409a valuations, our team of finance professionals is committed to partnering with you to reduce the financial burdens and administrative headaches that come with running a business.

Headquartered in the Bay Area, EGFS operates in nine markets: Silicon Valley, San Francisco, Los Angeles, Las Vegas, Seattle, Austin, Boulder, Chicago, and New York City serving 475+ small to mid-sized business clients nationwide.

EGFS was ranked #13 in Silicon Valley Business Journals' Fastest Growing Private Company Award for 2014 and earned a spot on Inc. Magazine's list of the 5000 fastest-growing private companies in the U.S.

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