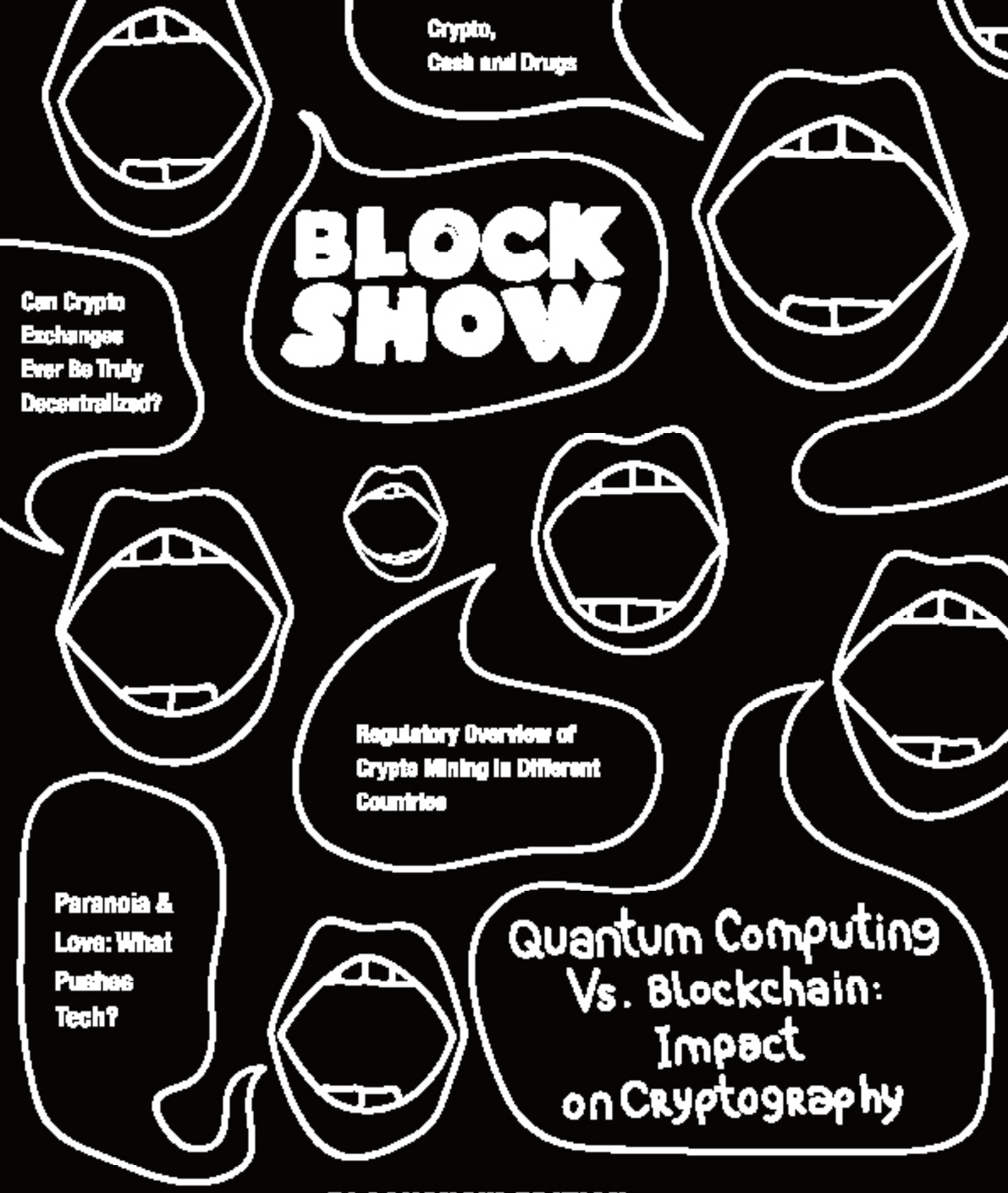

ASIA · BLOCKSHOW EDITION №5 · NOV, 2019

COINTELEGRAPH

BLOCK SHOW

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Welcome to the 2019 edition of BlockShow Asia
powered by Cointelegraph.

This year we are not only attracting
the whole Crypto community and thought leaders of our space;
we also truly believe that, in order to move the progress forward,
we need to involve real movers and shakers, we need to bring more trust,
more legal entities and traditional institutions.

That is why at this year's BlockShow you will hear
from Governments and Corporates whose input is crucial
for all of us right now.

We wish you have a great time, and enjoy networking,
stage performances, and side events of BlockShow Asia 2019,
the Festival of Decentralized Technology,
the main and final destination of the year!

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CEO at BlockShow

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LESS IS MORE

DAYS BEFORE BLOCKSHOW ASIA 2019, THE TEAM REFLECTS ON BECOMING A FESTIVAL OF DECENTRALIZED TECHNOLOGY — AND WHAT 2020 HOLDS FOR THE EVENT

WELCOME TO BLOCKSHOW ASIA 2019!

You cannot imagine how excited we are to write this. The passing year has brought some significant changes to the market and ecosystem — and, of course, to BlockShow as well. As you might already know, this year's event is very special: For the first time ever, BlockShow Asia will be held in the form of a Festival of Decentralized Technology.

It's clear that if anything changes, it happens for a reason: Having been constantly reconsidering the structure of our event, we have always been relying heavily on the industry itself, tracking the slightest shifts along with some global tendencies. We started BlockShow 2019 preparations at the beginning of the year — and this is what Addy Crezee, CEO of BlockShow, has to say about the ecosystem back then:

"While everyone was talking about the 'bear market' and 'crypto winter,' I was summarizing our 2018 results. Back then, BlockShow really managed to tell millions of people, both online and offline, about blockchain, so it's safe to say our mission was accomplished. However, that was also the moment when I realized we really need a single event a year to make this whole experience as valuable as possible. The ecosystem has calmed down and become more traditional: Now, everyone knows about Bitcoin, blockchain and decentralization. People don't need so many events anymore – now, it is all about real development, so the time has come for us to start gathering the community for another purpose."

Having analyzed the market, our team realized that people don't need such a large number of events anymore — and the events themselves should now reach efficiency by demonstrating real ecosystem development. That's when we first came up with this new format — the Festival of Decentralized Technology.

And so, we already mentioned a renewed BlockShow format twice — but what exactly has changed? Well, just about everything! While all the major elements have remained the same, each one of them has transformed so drastically that the final result has become something new. ***"I feel really positive about the changes we're making,"*** Addy Crezee states. ***"This time, BlockShow is going to become a single, ultimate platform to bring all the key players together."***

First and foremost — and something that you have already found out by yourself — is the main part of BlockShow Asia 2019. Instead of having a two-day conference, uncovering the major ecosystem topics in quite a superficial manner, this year we are holding 10 different conferences, which allow us to give a thorough disclosure on all the pressing issues of today's decentralized tech industry.

"This time, our approach to forming the agenda is completely different: we no more strive to discuss some general topics, shifting the emphasis to the most pressing problems appearing in different sectors of the global Blockchain ecosystem," Addy Crezee explains.

So, what are these conferences? Reading this, you are probably in the middle of exploring the content that

BlockShow has to offer. So, let's just outline some basic details. Starting with the specific, technical aspects of the industry, such as Development or Privacy & Security, our conferences will also be dedicated to some institutional topics, including Crypto Finance, Investments, Trading, Regulations, and also Marketing & PR. Finally, we will learn how decentralized tech interacts with other sectors — and conferences like BaaS, AI, and Games & DApps are here to shed some light on this.

Addy Crezee says:

"For me, the perfect agenda means shifting from the quantity to the quality of the topics discussed, combined with perfectly balanced attendee experience – that's why we are trying to make our content both valuable and fun."

Considering the fact we are actually holding a whole conference about Investment this year, we couldn't fail to add one of the traditional BlockShow elements – the startup competition — to the program. Known as Crypto Busters this year, the competition has remained the same in its substance — it's still about the promising blockchain companies competing with each other for investor support and visibility. Yet, we still managed to add something new: Startups appearing in the Grand Finale have been thoroughly selected by our investment experts during the Crypto Busters YouTube series.

Another BlockShow element that has come to the forefront is side events. What has earlier existed just as parties or single workshops is going to become so much more this year.

This time, our guests should definitely arrive in Singapore earlier, as well as clear out their schedules! Our side event program begins on Nov. 12 with the Block O2O Investor meeting, aimed to bring sophisticated investors together with thoroughly selected startups, and will last till Nov. 16, the day when Crypto DeFiance, a special edition of the global DeFi innovation event, will be held. Between these two events, the Festival will have so much more going on; apart from closed, narrowly focused gatherings — such as Medialogue, a media-only meetup — our list of 13 events will also include plenty of activities for the wider audience, including, for example, the Crypto Trading Masterclass organized together with TraderCobb. Of course, we couldn't leave the parties behind — this year, we're having at least two.

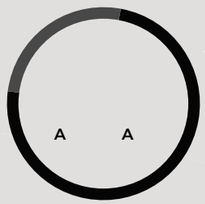
Alas, the moment has come — you're about to finish this piece. What's is happening as you're reading this? Maybe you're just about to experience everything we've prepared for you this year; maybe BlockShow Asia 2019 is over and you are trying to look into the future — just like us now. Addy Crezee shares his vision of what the future holds for BlockShow:

"BlockShow will keep the Festival format, but the Festival itself will become bigger by expanding the conferences, which will become more diverse and detailed content-wise. This is a part of our vision, according to which some major ecosystem elements — such as Finance, Regulations, etc. — will become separate events to address all the pressing questions. This is the only way for decentralized technologies to become truly widespread and mainstream".

What is the industry's future about? After all, forecasts are just forecasts. The industry will keep on evolving, one way or another, and BlockShow will be there to meet those changes. That's why we don't say goodbye — we say, "See you in 2020"!

STATS

COINTELEGRAPH



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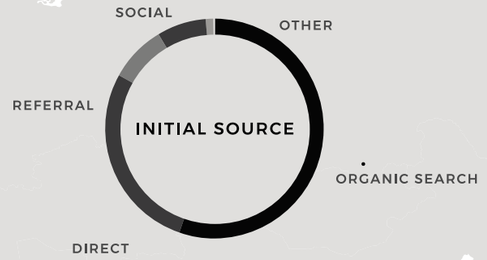

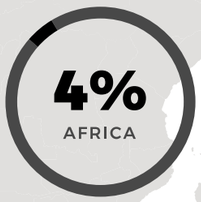

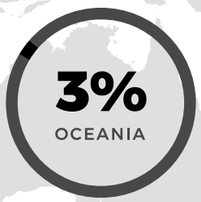

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Bluehelix is founded by James JU, a successful serial entrepreneur — he was the CTO of Huobi Global in the year 2014–2017, and Vice President of X-Financial (NYSE listed Company) thereafter. He founded Bluehelix in early 2018 and it has completed $15 million USD in its angel round financing and has received investment from a total of 56 institutional investors including top exchanges like Huobi and OKex. The core founding members consist of top talents from first-tier tech and financial companies including Google, Alibaba, Tencent, Baidu, Barclays Capital, Société Générale, Huobi, etc with extensive industry experience in the fields of finance, marketing, and technology.

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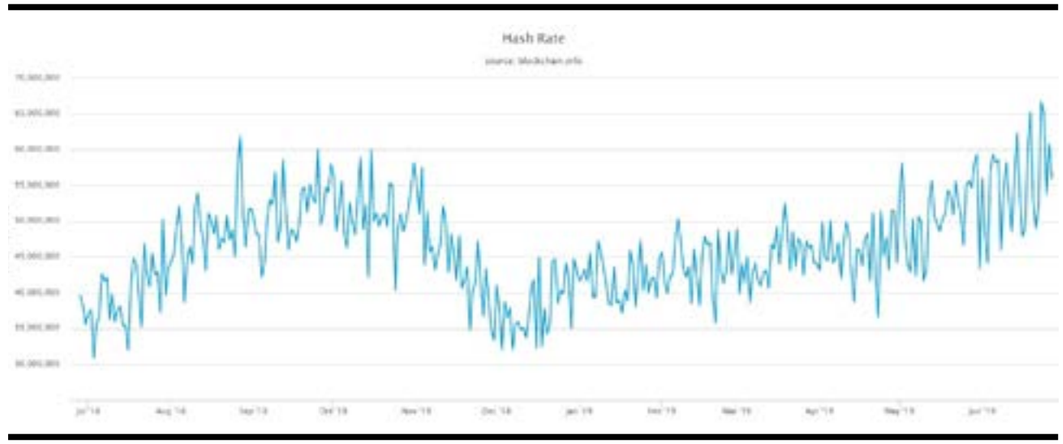
REGULATORY OVERVIEW OF CRYPTO MINING IN DIFFERENT COUNTRIES

A move by the Iranian government to cut off the power supply to local Bitcoin (BTC) miners grabbed headlines in June amid a soaring price gain by the preeminent cryptocurrency. As Bitcoin surged to prices not seen since 2017, a rising hash rate mirrored renewed interest in the cryptocurrency. By July 1, the Bitcoin mining hash rate surpassed 69 quintillion hashes per second.

Nevertheless, the action by Iranian officials is a stark reminder that regulatory moves can still hold sway over the use of cryptocurrencies around the world. The Bitcoin mining space has marched on over the last two years through the depths of a humbling and harsh environment for the entire cryptocurrency space.

According to data from Blockchain.com, the Bitcoin mining hash rate has been on a steady increase over the last six months:



These are encouraging signs for the mining ecosystem despite pressures on a number of fronts. Price volatility and regulatory efforts have been notable obstacles. With this latest instance of regulatory pressure on cryptocurrency mining in Iran, Cointelegraph takes a deeper look at the major countries that have extensive cryptocurrency mining activity and the stances they have taken over the past few years toward the emerging industry.

china

China has had an intriguing relationship with cryptocurrencies over recent years. Its government has taken a hard line toward cryptocurrency trading, banning financial institutions from Bitcoin trading, initial coin offerings (ICOs) and crypto exchanges.

Despite the status quo, China's Bitcoin mining scene is a major player in the global hash rate, with China–based mining pools reportedly mining potentially 70% of all the coins created yearly. Furthermore, the global Bitcoin mining pools are dominated by Chinese ones. The reason for this dominance is largely due to the massive surplus of electricity in the country. This is most evident in the Sichuan province, which is considered to be the Bitcoin mining capital of China. It has been reported that this surplus of electricity has led to various power producers encouraging companies to set up mining operations in order to exploit untapped energy.

The dominance of China's Bitcoin mining contingent could be disrupted if the regulations that were suggested back in April of 2019 come to fruition, when a government agency lobbied to ban crypto mining outright in the country.

It is a potentially damning blow for a country that is home to the likes of Bitmain, the producer of the world's most popular ASIC miners. The company also has its own mining operations set up in the country.

Various reports in 2018 also suggested that many mining operators were looking for greener pastures overseas amid growing pressure from the Chinese government. It is understood that environmental concerns and a lack of tax revenue are driving factors of the apathy toward crypto mining in China.

RUSSIA

Russia has a more lax approach to Bitcoin and cryptocurrencies in comparison with China — in that it still does not have a definitive regulatory stance on the space. Bitcoin is not regulated, but its use as a payment option for goods and services is illegal. This was set to change in the summer of 2019, when the Digital Financial Assets bill was expected to come into effect — though as of November, the legislation has been postponed indefinitely .

At this point in time, cryptocurrency mining has continued in the country, with the cold climate and cheap electricity as contributing factors. However, a report in June suggested that cryptocurrency mining operators could face fines in the future.

Anatoly Aksakov, the chairman of the State Duma Committee on Financial Markets, told local media outlet TASS that cryptocurrencies created on open blockchains were considered illegitimate. At the same time, Aksakov stressed that it is not illegal to hold Bitcoin in Russia if the cryptocurrency has been bought or acquired outside of the country.

> ***It is not illegal to hold Bitcoin in Russia if the cryptocurrency has been bought or acquired outside of the country***

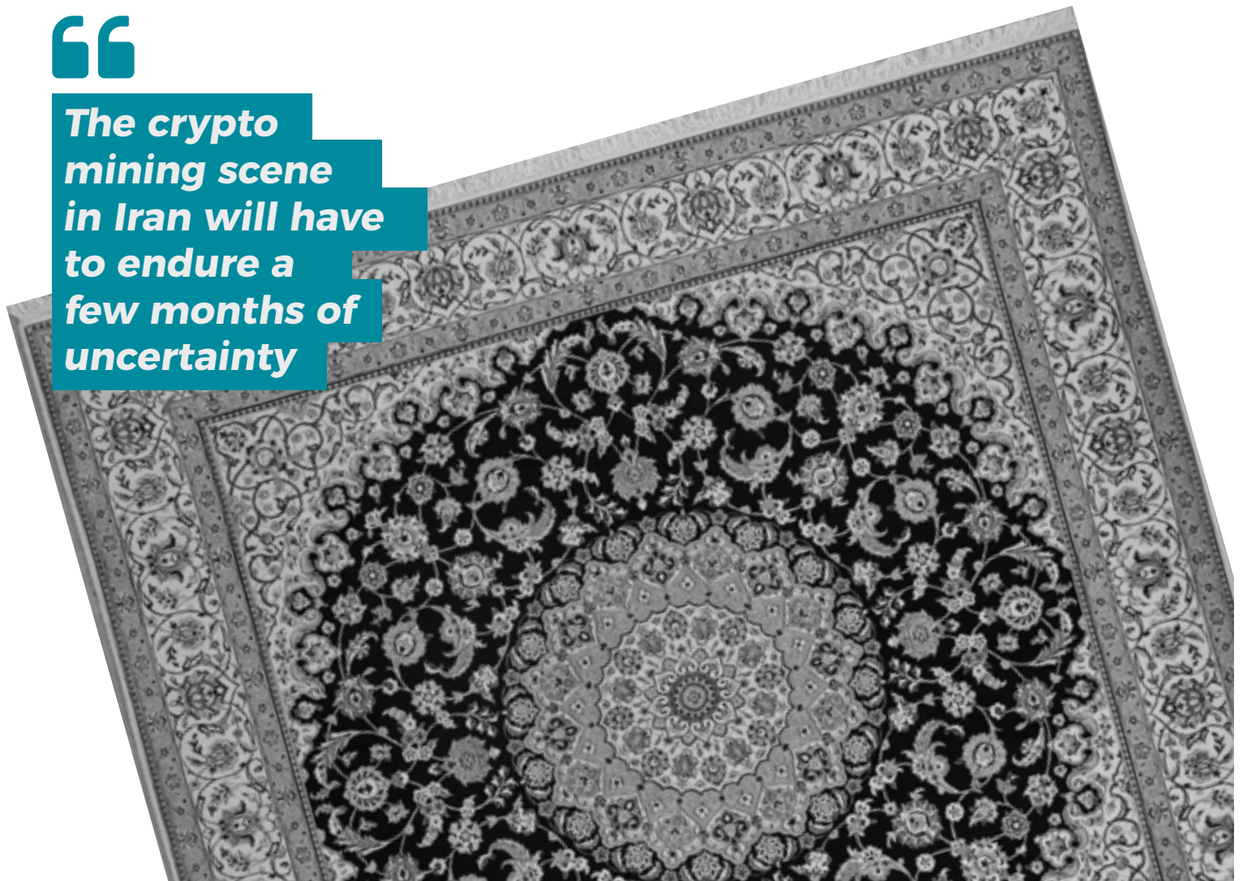
IRAN

As Cointelegraph previously reported, Iran's government has taken a stern stance toward the crypto mining industry in the country due to a massive increase in electricity usage. The Iranian Ministry of Energy believes that mining operations are to blame for an irregular 7% spike in electricity consumption amid fears that its grid is taking undue strain. The ministry intends to cut power to crypto mining operators until it has approved new energy tariffs.

Iranians currently benefit from government subsidies, which reportedly bridge the gap of how consumers are billed and what their actual electricity costs are. It is a situation that has provided a favorable environment for crypto miners. The mining ecosystem had received a regulatory stamp of approval in September 2018 after a number of Iranian government departments officially accepted crypto mining as a legitimate industry in the country. This is expected to be ironed out by formal regulatory and legal frameworks.

Given the increase in mining activity and the profitability in Iran, the country's deputy energy minister, Homayoun Haeri, suggested in June 2019 that the billing of mining operations should be the same as charges for power exports. Despite the positive sentiment that was portrayed at the tail end of 2018, the crypto mining scene in Iran will have to endure a few months of uncertainty until the new electricity tariffs are approved by the Iranian government. It is a blow for a country that is looking to cryptocurrencies as a possible means to bypass harsh economic sanctions that have hampered its ability to trade with the global community.

> ***The crypto mining scene in Iran will have to endure a few months of uncertainty***



CANADA

Canada has positioned itself as a crypto–friendly country that is openly providing opportunities for cryptocurrency mining operations to set up shop. The country has classified Bitcoin as a commodity, which makes users liable to pay tax, depending on how they acquire and use the cryptocurrency. If a Canadian receives Bitcoin as income, it is taxed as such, and if they hold it as an investment asset, they are liable to pay capital gains taxes.

As Cointelegraph contributor Selva Ozelli noted in an expert take last year, cryptocurrency mining is also taxed, depending on whether the operation is run as a business or a personal hobby. The latter is considered a nontaxable event. While the trade and use of cryptocurrencies are welcome but controlled in the country, the mining scene has been nurtured to a far greater extent.

A major catalyst for this has been the work of electricity provider Hydro–Québec and the Canadian government's energy regulator, Régie de l'énergie. In May 2018, Quebec's provincial government lifted a moratorium on the sale of power to cryptocurrency mining operators. At the time, over 100 potential mining operations had applied to purchase power from Hydro–Québec with reported energy consumption in excess of 10 terawatts per hour. Hydro–Québec runs 60 hydroelectric power stations, which, at that time, produced a surplus of around 13 TWh.

In June 2018, Hydro–Québec then introduced rules that required prospective cryptocurrency mining companies to bid for electricity. Their requests would need to be substantiated by business cases, which specified jobs and investments that would be generated by their specific operations. Part of these rules would allow Hydro–Québec to enforce load–shedding on mining operations during periods of increased power demand from the province.

Within a couple of months, the energy supplier had to halt the processing of requests from miners due to the massive demand from the industry, which exceeded the provision of electricity at the time. Almost a year later, in April 2019, the Régie de l'énergie released new rules for the sector that have essentially ironed out the process for cryptocurrency miners to gain access to electricity.

Hydro–Québec was ordered to allocate 300 megawatts to the blockchain industry over and above the 158 MW that it had already been providing to its existing customers, along with 210 MW supplied by municipal distributors. In order to gain access to this allocated power, mining companies have to pass a selection process. The main criteria include jobs created, payroll of these jobs, the value of investments as well as heat recovery.

THE CZECH REPUBLIC AND ICELAND

The Czech Republic is worth noting, as it is home to Slushpool, one of the biggest mining pools in the world. The pool accounts for 7.5% of the total hash rate distribution. The European country is fairly relaxed in terms of its regulatory stance toward Bitcoin and cryptocurrencies as a whole. The Czech government does not consider Bitcoin as legal tender and classifies the cryptocurrency as an intangible asset.

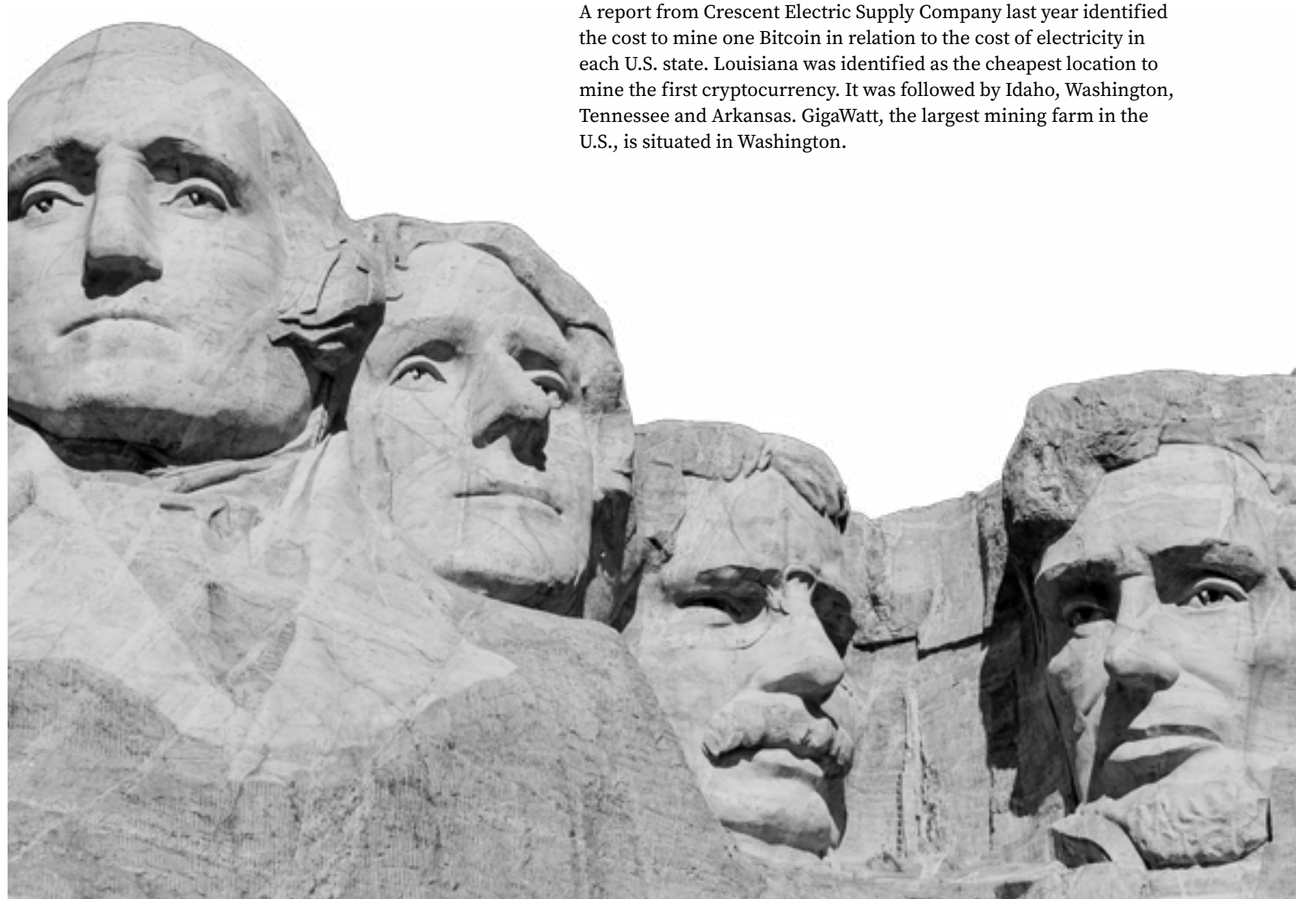
Likewise, Iceland became a hub for cryptocurrency mining, given its cold climate and abundance of renewable energy sources. In February 2018, it was speculated that the electricity usage of the industry would surpass the total amount of energy used by households in the country. At that time, Genesis Mining was reported being the biggest energy consumer in Iceland.

USA

America also has a strong mining culture that has been enabled by a fairly pragmatic regulatory approach in the country. The U.S. Commodity Futures Trading Commission classified Bitcoin as a commodity in September 2015, and it is still treated as such. There are no specific restrictions on mining activities, while several states have taken different lines of approach to cryptocurrencies in general.

The city of Plattsburgh in New York could well be the only place in America that has formally banned cryptocurrency mining back in March 2018. This occurred after local residents began to complain of rising electricity bills as a result of cryptocurrency mining in the area. The city is located near a hydroelectric dam that provides cheap electricity. In March last year, the biggest mining operator in Plattsburgh reportedly used 10% of the city's 104 MWh power supply. As a result, the Plattsburgh City Council enforced an 18–month cryptocurrency mining ban.

A report from Crescent Electric Supply Company last year identified the cost to mine one Bitcoin in relation to the cost of electricity in each U.S. state. Louisiana was identified as the cheapest location to mine the first cryptocurrency. It was followed by Idaho, Washington, Tennessee and Arkansas. GigaWatt, the largest mining farm in the U.S., is situated in Washington.



A GLOBAL PHENOMENON

The countries mentioned above have significant mining activities, but the truth is that cryptocurrency mining has become a global phenomenon. The major factor in the location of large mining farms is the availability of affordable electricity. Following that, the climate also plays a role. European countries and places like Canada have the added benefit of being in cold environments, which makes the cooling of equipment a straightforward endeavor.

The nature of Bitcoin mining, in particular, demands an increasing amount of power as the mining pool grows. The difficulty is constantly adjusted every 2016 blocks to ensure that one block is mined around every 10 minutes. This means that mining could potentially use more energy over time, as more miners vie to verify transactions and receive the BTC reward after mining a block.

Late in 2018, a study suggested that the total electricity usage of global cryptocurrency mining had surpassed that of mineral mining. This is a fact that has led to heavy criticism over the past two years. Some of these concerns have been abated by another report in June 2019 that suggests that as much as 74% of Bitcoin mining is powered by renewable energy sources. This will continue to be a hotly debated topic and will no doubt continue to be a consideration for mining operators around the world.

By Gareth Jenkinson

CAN CRYPTO EXCHANGES EVER BE TRULY DECENTRALIZED?

Earlier this week, British–American entrepreneur John McAfee, who is currently living "in exile" due to tax-related charges filed against him by United States authorities, launched his own decentralized exchange, or DEX.

The expressive crypto advocate's McAfeedex.com is running on the Ethereum (ETH) blockchain, and, in McAfee's own words, it is a "Wild, Wild West exchange" that purportedly cannot be seized by regulators. "There is nothing to shut down," he wrote on Twitter. "Our technology is the smart contracts forever residing on the blockchain."

According to the businessman, the DEX — currently in beta — is open source and imposes no Know Your Customer (KYC) or Anti–Money Laundering (AML) requirements on its customers.

But can a crypto trading platform be fully exempt from regulations in the current, post–ICO environment, where authorities are actively prosecuting bad actors and discussing the possibilities of digital assets in Congress?

In the new Crypto Myths series, Cointelegraph will attempt to debunk various assumptions circling around the crypto space.

What's a DEX?

In the most basic sense, there are two kinds of cryptocurrency exchanges: centralized and decentralized. The former are much more popular, as they seem to account for more than 99% of the global cryptocurrency trade volume. As a testament to this fact, the largest and most well–known trading platforms — Coinbase, Kraken, Binance, Bittrex, etc. — are all centralized.

They act as middlemen, connecting people willing to trade cryptocurrencies while holding their assets on company-owned wallets. As a result, once a trader deposits their coins into a centralized exchange, he or she essentially hands over control of their private keys, trusting the platform with the safety of their assets.

This practice goes against the decentralized agenda prominent in the cryptocurrency space, namely the catchy, "Not your keys, not your Bitcoins" proverb. Last year, Vitalik Buterin, co–founder of Ethereum, went as far as to say that centralized exchanges should "burn in hell."

DEXs, therefore, are built in such a way that allow users to retain ownership of their cryptocurrencies and private keys. Specifically, they are peer-to-peer services that allow direct transactions between two interested parties directly on the blockchain. Moreover, given that DEXs use smart contracts to facilitate trade, they require far less supervision compared to centralized platforms.

While some people still find it easier to trust a third party with their private keys, DEXs have other major benefits over centralized exchanges — namely anonymity and security. Indeed, decentralized platforms are much more difficult to hack because they rely on smart contracts. This contrasts with the regular breaches experienced by centralized servers, resulting in multimillion-dollar losses every year. Additionally, lax KYC requirements are also a plus for the cryptocurrency enthusiasts who value anonymity.

DEXs are still lagging behind centralized platforms. Why?

DEXs remain a strongly alternative option, as proven by relatively low liquidity rates. There are a number of reasons for this, experts say, like cost and speed of trading. Andrej Cvoro, CEO and founder of R&D blockchain firm DeCenter, explained to Cointelegraph, "Centralized exchanges are of course historically older and hence had more time to accumulate both users and liquidity, win users' trust and tweak the user experience." According to Cvoro, even some supposed advantages of DEXs come with certain drawbacks, while security is also an issue:

"DEXes are trustless systems where users keep their funds within their wallets and have them exchanged through smart contracts, but this does involve on–chain interactions, which then includes waiting for transactions to be mined and paying required fees for them. DEXes also expose all orders and the accounts making them, which some users want to avoid. Finally, DEXes could also have security issues and have known to struggle with issues such as front–running"

User experience and institutional involvement are other factors that should be taken into consideration, according to John Todaro, director of research at TradeBlock, a provider of institutional trading tools for digital currencies. The analyst told Cointelegraph that centralized exchanges, by nature, would have more institutions and market makers using them, adding that:

> **"Given institutions typically operate within a specific regulatory sandbox, they are more comfortable trading through centralized exchanges than DEXs. Further, the majority of retail flows are concentrated on centralized exchanges. Using a DEX requires a deeper understanding of wallets and exchange order books than using a centralized exchange such as Coinbase which can be accessed via a smartphone app, and thus has limited the customer pool for DEXs."**

DEXs are still lagging behind centralized platforms. Why?

Another crucial problem for DEXs lies within their name, as there is no clear definition that would fully explain what this kind of trading platform should entail. As the phenomenon became more popular last year, many well-known cryptocurrency exchanges such as Binance and Huobi decided to use their brands to launch their own decentralized marketplaces while applying the same compliance principles. In fact, the majority of DEXs now follow regulatory standards like KYC and AML in much the same way as centralized platforms, Todaro said:

> **“Many DEXs have KYC/AML procedures in place and decide which tokens are added to their platforms. Regulators have shown in the past that DEXs are subject to existing exchange requirements, and if DEXs do not comply, DEX creators are subject to fines and other repercussions.”**

Some experts are even reluctant to call those exchanges decentralized. “Today, most exchanges which call themselves decentralized exchanges are actually only noncustodial exchanges,” said Eyal Shani, a blockchain researcher at consulting firm Aykesubir. He elaborated:

> **“They do not own your digital assets, but the exchange operator is still much in control of everything regarding the platform. Any exchange that relies on a traditional web front to facilitate the order book, runs normal KYC/AML processes are not completely decentralized. But that’s a matter of definition.”**

In Shani’s view, a true decentralized exchange would be the one that facilitates fee-free transactions between people without the need for KYC or AML, he noted:

> **“However, running such an operation is usually costly, and those who engage in that kind of business usually wishes to make a profit out of it. And this is where the law kicks in and dictates that if one is making profit out of the operation, he is de facto in charge of it, and requires that entity to run KYC/AML among other requirements”**

Thus, to avoid potential confusion, decentralization should be seen as “a spectrum, rather than a binary, black and white classification,” Cvoro suggested, providing some specific examples:

> **“On one end, there are the least decentralized options, such as Binance DEX, that require KYC, have limited availability depending on the user's country of residence and rely on centralized, server–based order matching, among other things. And on the other end there’s, for example, Uniswap that has no KYC whatsoever, has unlimited global availability and does everything on–chain without any accounts with admin privileges of any sort.”**

So, what about McAfee’s DEX, boldly marketed as an independent platform and backed by someone who is himself hiding from authorities in international waters? Shani wrote in an email to Cointelegraph, “To the best of my understanding, McAfee’s DEX does profit from running the operation, so I recommend him to ask the creator of EtherDelta what the SEC thinks of those kind of exchanges.”

Shani was referring to when U.S. authorities charged Zachary Coburn, the founder of decentralized crypto token trading platform EtherDelta, with operating an unregistered securities exchange. ’

Coburn neither admitted nor denied the allegations, but consented to pay the state over $300,000 in unlawful profits, along with other penalties. However, McAfee is well-aware of the concerns of the Security and Exchange Commission — at least according to his Twitter, where he wrote:

> **“SEC says as long as we follow AML and KYC procedures the http://McAfeedex.com exchange is OK. But we don't follow either and why should we even if we could? We are just a window into the blockchain where people trade. This is for the people, not the Government. F*ck them.”**

Thus, even though the McAfee DEX “does stand out as one of the more decentralized exchanges out there” due to having a decentralized listing process and self-custody on top of requiring no personal information for KYC and AML procedures, “there are still likely central points of failure on the back-end that regulators could target,” says Todaro.

Myth busted?

Theoretically, it is possible to run a fully decentralized exchange, Shani told Cointelegraph. However, it would certainly involve much less profit for the owners, especially considering the current trading volumes that DEXs are demonstrating. Shani added:

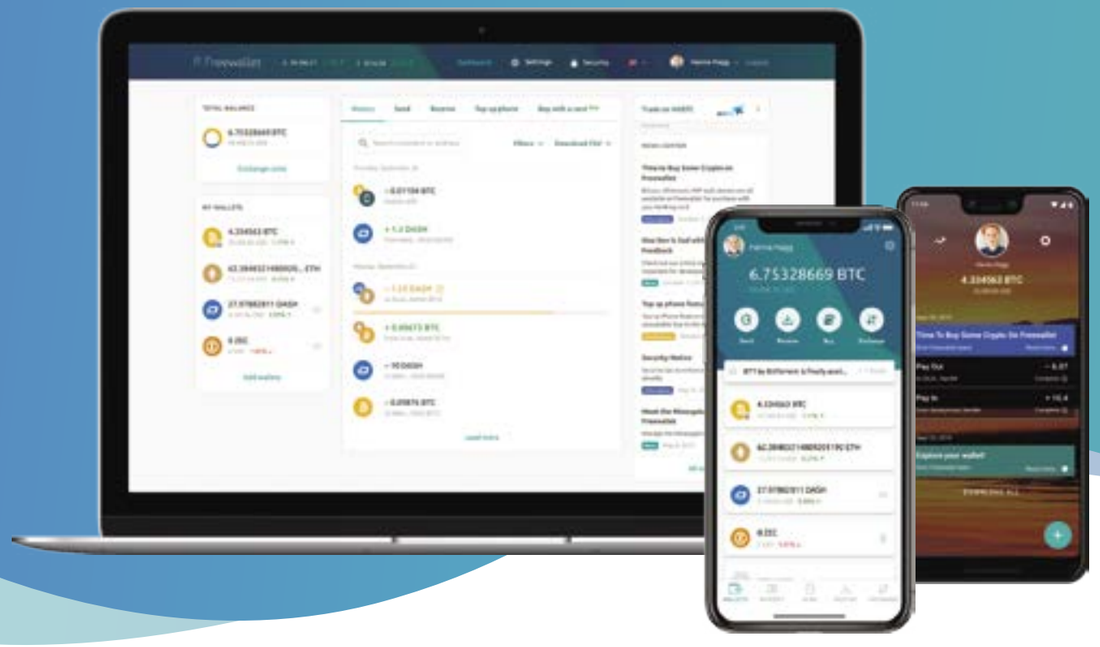
> **“There is a way to run a truly decentralized DEX. But it could potentially be so expensive that it would scare away the small traders. For that to happen, in addition to having no KYC/AML, running the orderbook and saving all data on replicating systems. But even then the government could block those services, fine whoever is involved etc.. So we would need a decentralized DNS servers, decentralized ISPs and many more services which are great solutions. Yet, based on the current volume on the so called DEXes, it seems like a solution looking for a problem, rather than a true product–market fit.”**

Indeed, based on the current trading history displayed on the McAfee DEX, it seems that the service has yet to experience a massive influx of traders. Todaro explained that, generally, cryptocurrency traders tend to value other features besides anonymity and decentralization:

> **“There is a demand for fully decentralized exchanges, but I would expect the vast majority of traders and exchange users to prioritize liquidity, token availability (i.e. access to more tokens than just ERC-20s), and ease of use over a platform that ‘no one can block.’”**

Therefore, it is still unclear whether the market is ready for a fully decentralized exchange, even if there is one. Given that the top three trading platforms are calculating their each and every step (namely in the U.S. market) to avoid facing large fines from regulators, it would seem unlikely that a “true” DEX could perform that well in the current landscape — in terms of profit, at least.

By Stephen O'Neal



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* decentralized finance

Institutional-grade blockchain perfomance

+

Powered by liquid assets

+

oraclize

EOS TITAN
Delphi Oracle

Leading infrastructure

=

Equilibrium

Unleashing a multichain framework for DeFi

EOSDT — #1 asset-backed stablecoin on EOS (USD-pegged)

Use cases

1. Stablecoins & synthetic assets

EOSDT — the #1 decentralized stablecoin on EOS

eosdt.com	$20,000,000	5,402,356 EOSDT
live in production	collateralized EOS	generated

2. An application suite by Equilibrium Lab

Equilibrium gateway

The DApp for generating Equilibrium-based stablecoins

live in production

Proxy voting system

Tamper-proof on-chain voting chooses block producers for the Equilibrium EOSDT Proxy

live in production

Open-source DeFi apps

Wireframed open-source DeFi prototypes which anyone could take home from there

incubating

eqframework.io

BUSINESS
INTERVIEW

PARANOIA & LOVE: WHAT PUSHES TECH?

A DISCUSSION WITH PROF. REICHENTAL

Professor Jonathan Reichental is the incarnation of a tech man. One of the most competent opinion leaders in the innovation field of our times, he has managed to be successful as an advisor to business and governments, a professor in leading universities, a writer, the chief information officer of Palo Alto in Silicon Valley, an investor... the list continues. Currently, he is deeply engaged in the blockchain community and also doing a lot of work in quantum computing. Just to illustrate his influence on modern leaders, it is enough to say that among Reichental's subscribers on Twitter, you can find former United States President Barack Obama.

We had a fascinating one–hour–long conversation with professor Reichental, talking about what makes a piece of technology great, how to survive when you have too many things you want to do, and who should promote blockchain and crypto projects. And I was so inspired by this talk that I asked Jonathan to launch a series of Expert Takes for Cointelegraph, which (yes, it will be my answer to, "How did you spend your summer?") will see the light very soon.

> *The biggest mistake of history is someone saying 'I think we've invented everything that can be invented.' Of course, every single time, it's completely wrong.*

ONLY THE PARANOID SURVIVE (IF THEY ARE IN LOVE WITH WHAT THEY DO)

OUR DISCUSSION ON TECHNOLOGY STARTED EVEN BEFORE THE FIRST QUESTION OF THE INTERVIEW, AS WE TALKED ABOUT THE MESSENGER WE USED FOR OUR CALL AND HOW THE DYNAMICS OF ALL THESE SKYPES, WHATSAPPS, ZOOMS AND OTHERS INFLUENCE OUR LIVES.

I think it demonstrates something very interesting, which is: No product can ever be comfortable that it owns the market — it can never be confident. Andy Grove, who helped start Intel, he wrote a book about it [A. S. Grove, "Only the Paranoid Survive," 1996], saying, in business, you must be paranoid every day.

The point is, if I came to a group of investors and said, "Hey, I'm going to work on a new collaboration tool for voice over the internet, or video," the answer they probably would give is, "That's a ridiculous idea. There's, like, 20 solutions — plus, doesn't Skype and Google Hangouts and two or three others own that market?" And the proof is that now, if you build a superior product with a better experience, you can dominate; you can win back market share.

WHEN YOU FIRST READ REICHENTAL'S BIO, YOU RISK BEING OVERWHELMED BY THE AMOUNT OF DIFFERENT PROJECTS HE HAS SUCCESSFULLY CONDUCTED AND HOBBIES HE FOLLOWS. URBAN DEVELOPMENT CONSULTANCY, QUANTUM COMPUTING COURSES, MUSIC COMPOSITION AND PLAYING GUITAR, BLOCKCHAIN PROMOTION — THIS IS AN INCOMPLETE LIST OF HIS SUMMER'S TO-DO. SO, MY FIRST QUESTION WAS BASICALLY ABOUT A PARANOIAC FEATURE OF JONATHAN'S LIFE: HOW DOES HE COMBINES SO MANY INTERESTS AND MANAGE TO BE SUCCESSFUL IN ALL THOSE AREAS?

I've been lucky enough to be born into the beginning of the information age, when things were really getting going. I've not really known a world without tech, and my first exposure to a computer was my older brother bringing one home when I was probably five or six years old — and then I got interested in the games myself and even programming.

And these were the days when you would buy a magazine, and the magazine would list the code, and then you type the code into your computer. There was no "online." The best you could do was go to a store and buy a cassette — or later on, a disk — and then load the software. But there's no hard drive, so every time you wanted to use it, you had to insert the disk and read the information off it.

My two big themes in the early part of my life were an interest in technology — computers — and then my interest in writing music. It turns out, by the way, that a lot of musicians like computers. There's something about how the brain functions and thinks about music and things like software engineering and problem-solving.

> *I think the lesson that I learned, and what I share with people, is you should do what you love and hopefully, in most instances, if you love it, you'll be better at it. And if you're better at it, then you will be successful in some way.*

It doesn't apply to everything, of course, but just the idea that you wake up and you're excited about what you're doing is a tremendous motivator for practice, for learning — and that has happened to me now. I'm a couple of decades into my career. I'm more passionate and more energized by technology than ever before. So, long may it last.

AND COMBINING ALL THE INTERESTS YOU LOVE FOLLOWING IS ABOUT GOOD TIME-MANAGEMENT?

Do you use your time well every day? Not to get too philosophical, but the basis of that for me is making every day matter. Do you wake up and think this is gonna be my best day? I don't know what's happening tomorrow, but I know what's happening right now. Part of it is that I know this life is short and unpredictable. So, I'm doing a lot of different things simply by managing my time and doing the things I love. And hopefully, they also impact others in a positive way.

AB URBE CONDITA... TO THE CRAZY TIMES

ONE OF THE MOST EXCITING PAGES OF REICHENTAL'S BIOGRAPHY IS HIS SEVEN-YEAR ADVENTURE BEING THE CIO OF THE CITY OF PALO ALTO, WHICH HAS SERVED AS AN INCUBATOR TO COMPANIES SUCH AS GOOGLE, FACEBOOK, APPLE, SAP, PAYPAL, PINTEREST, HP AND TESLA, SOME OF THEM HEADQUARTERING THERE.

I saw cities as a very complicated machine that ran on a whole series of technologies. And if you did it right, and you tweaked it, you reinvented it in areas. You could improve the lives of thousands of people and millions of people. And then eventually, as this movement continues, you can positively impact billions of people.

> *And there's been nothing more dramatic than the impact of our cities on humanity in terms of a positive trajectory.*

BUT WAS THE GEOGRAPHICAL LOCATION KEY TO THE SUCCESS OF THE COMPANIES MENTIONED ABOVE? MAYBE NOT. WE ALSO HAD SO MANY CASES IN HISTORY IN WHICH COMPANIES THAT CONSTITUTED ALMOST A MONOPOLY ON THE MARKET THEN ALMOST DISAPPEARED (I WON'T TELL YOU WHICH WERE MY FIRST THREE MOBILE PHONES, BUT ALL OF THEM WERE OF THE SAME FINNISH BRAND. AND THEN SOMETHING HAPPENED, AND I AM NOW USING THREE DIFFERENT PHONES, NONE OF THEM MADE IN SCANDINAVIA). SO, WHAT IS NECESSARY FOR A TECHNOLOGY TO BE SUCCESSFUL, AND FOR A COMPANY TO ALWAYS BE ON THE AVANT-GARDE OF TECH DEVELOPMENT?

Nobody knows the perfect answer to that question. In life, there is a certain element of things that you can control as an individual. And then there's an awful lot that's out of your control. And then there's luck. Things that you can control are what you learn, the decisions you make. Things that you can't control are where you're born, some of your biological faculties — and then luck is just luck, right?

Now, the question is what's next. And to me, and I say this to all the companies I coach and all the leaders that I speak to, is what really matters is a great idea.

> *It might not be obvious to everybody what that great idea is and what makes a genius a genius is that you see something that others don't see. And you have to have the conviction that what you're doing will work even when others tell you you're crazy.*

So, if you are on the beginning of the process, if you're an entrepreneur in the startup process, it's a great time. What's not as easy is when you are an incumbent — when you have an existing technology and you're serving the marketplace. This is probably the most unpredictable time in history for you. If you look at the Fortune 2000, years ago, these companies lasted for decades. And now, the period of reinvention and disruption is displacing these companies very quickly.

I do speak to a lot of people who have ideas about what's possible and what the market will accept that doesn't seem rooted in a reality and that can be very hard for an entrepreneur — because the idea is their baby, and nobody likes their baby to be criticized.

So, what can be done to enable technology to be successful at that level is: to be paranoid and to be constantly scanning and reacting to the nature of the global marketplace and the emergence of disruptive technology. And that's not something that is a passive activity. That has to be active. You have to have people and skills and teams and investment in that to help you. You have to be prepared to quickly move into new markets or quickly reinvent your product based on the circumstances of the marketplace.

> *There isn't a secret, here, to be revealed. The answer is that to build or to run a business today is more possible than ever before, but it's also more complicated and riskier than in the past — certainly because the macro conditions are changing so quickly. And there's no time to rest, which is unfortunate. Makes us all a little crazy.*

BEST TIME FOR TECHNOLOGIES VS. BEST TECHNOLOGIES OF ALL TIME

OKAY, AND SO WE LEARNED THAT IT IS THE BEST TIME TO BE A TECHNOLOGIST (WHO WOULD DOUBT THAT? WE LIVE IN THE TIME BITCOIN WAS INVENTED!) BUT HOW CAN WE KNOW THAT WE HAVE THE BEST TECHNOLOGIES AROUND?

The biggest mistake of history is someone saying "I think we've invented everything that can be invented." Of course, every single time, it's completely wrong.

In each of the prior three revolutions, the world changed dramatically. In the first revolution, steam power transformed transportation and manufacturing, which led to bigger cities and that whole set of laws and new norms that actually, on balance, improved things a lot. We had a second revolution that introduced electricity, and I don't think anyone would ever doubt or underestimate the impact electricity has had on the world — to me, actually, that is the most important thing we humans have ever leveraged. And third, the information technology revolution: Our laptops, our smartphones and the internet have completely changed how our days go.

And this Fourth Industrial Revolution is, by far, potentially the greatest transformation that will happen on the physical, digital and biological side. Not only will all these bend up in ways that are hard to anticipate directionally, but when they intersect, that gets really interesting.

One of the characteristics of the Fourth Industrial Revolution is convergence. And this is a little bit of a cliche example, but you couldn't have Uber 15 years ago, because you can't have Uber without smartphones, or without social computing, or Big Data, or AI, or GPS, or online payment systems — they all have to exist. They all have to be really good and they have to work together. And when they all exist and they work together, you get a groundbreaking service like on-demand transportation.

> ***And what we're gonna see now in the Fourth Industrial Revolution is not only new technologies that are bigger in their impact and are adopted faster, but they are going to converge in ways that the outcomes are very hard to see.***

HOW TECHNOLOGIES ARE MOVING THE WORLD FORWARD, AND WHO IS MOVING THEM

THE BIGGEST TECHNOLOGICAL INTERESTS REICHENTAL IS WORKING ON RIGHT NOW ARE ARTIFICIAL INTELLIGENCE, QUANTUM COMPUTING AND BLOCKCHAIN. WHAT COULD HAPPEN WHEN YOU CONVERGE ALL THIS?

Actually, that's a question I can ask a classroom of students. Hands are gonna go up and people have tons of ideas. But the real answer is: We don't know. Because, if you look back at history, at no time when a new technology was introduced that had significance did we actually appreciate the impact it would have.

When electricity was first leveraged, no one was thinking this will eventually lead to smartphones. You could not connect 200 years ago with the early 21st century and say, "You know what? This is cool, this electricity. And we are gonna have smartphones in a couple of hundred years."

> ***The kind of innovation and transformation that's going to occur is impossible to predict. And, you know, what's really interesting: When it happens, it seems obvious.***

So, really, the best has yet to come. I don't know how it's going to impact us, but the best has yet to come.

> ***And there's been nothing more dramatic than the impact of our cities on humanity in terms of a positive trajectory.***

BUT DO THE LEVERAGES FOR TECHNOLOGIES CHANGE DURING TIME? WHO IS AND WHO SHOULD BE THE BIGGEST ACTOR ON THE MARKET NOWADAYS IN ORDER TO PUSH TECHNOLOGY TO MASS ADOPTION?

The broad answer is that there are all of them. There's an important role for government, a very important role for the private sector, and for the academic community.

One of the ways to think about this question is a national space program. To put a person on the moon in the 1960s was a phenomenal undertaking, but it cost a fortune and it required — when all was said and done — millions of people to make it happen. So, only nations could do that — and only a small set of nations. Now, fast-forward: Many more countries are involved in the space race, and the private sector is fully engaged. And so, as technology evolves, those that can participate changes.

> ***Government often has a role when something is highly risky and expensive at the beginning. The private sector doesn't necessarily like to or can do the expensive things and the highly risky things at the beginning. Government doesn't need to be involved in innovation, and efforts that the private sector can do with less bureaucracy are done more quickly, and are more agile.***

At the end of the day, the marketplace is a great mechanism for those who participate, and here's an example: During the Obama years, the administration made a big investment in solar. The government literally wrote a check to enable solar innovation — it didn't work for a variety of reasons. However, the private sector started to invest in solar and it's been significantly successful — and continues to be more successful.

WHO IS PUSHING BLOCKCHAIN DEVELOPMENT, AND WHY IT IS DIFFERENT FROM CRYPTO?

REICHENTAL IS SPECIFIC ABOUT THE DISTINCTION BETWEEN BLOCKCHAIN AND CRYPTO: FIRST, BEING "A PLATFORM TECHNOLOGY THAT CAN BE USED IN ALMOST EVERY DOMAIN," THE OTHER BEING, "FOR THE MOST PART IT IS A UNIT OF MONEY OR UNIT OF VALUE AND HAS SPECIFIC IMPLICATIONS AS A CONSEQUENCE OF THAT." BUT DO THE ACTORS WHO RUN THESE SHOWS DIFFER?

There's an awful lot of innovation happening in the private sector on blockchain, and probably it'll stay that way. If blockchain is used in a health care context, sure, there's gonna be regulatory bodies and government. If blockchain is used as the back-end of a customer-relationship management application, I don't know if there is much role for the government on that. If you want to use blockchain for doing online voting or identity management, you're going to have to get every stakeholder involved.

But I would say, for the most part, blockchain can be driven with impact and speed and consequence, too, through the private sector — and they're going to have to just work with their partners as appropriate.

Crypto is more complicated, in my view. And rather than the sort of tokenization flavor, I'm more talking about crypto as it relates to being a unit of currency. I do think that that is a much more complicated partnership.

> ***The banks and the financial institutions are not going anywhere. They're changing, but they're not going away. So, we're going to have to all play nice together.***

We have to work with the financial infrastructure globally, with governments, with regulatory bodies and with oversight organizations that ensure that people aren't being ripped off every day.

> ***Blockchain, just as a kind of base, core, fundamental technology, I think, has a lot of freedom in the private sector to run. And you can see the incredible ways it's been used and the incredible innovations that are emerging because of that private-sector use.***

THERE IS NO "VERSUS" IN THE TECHNOLOGY–PEOPLE RELATIONSHIP

AND THEN, WE ENDED OUR TECHNICAL TALK ON A VERY SOCIAL NOTE. WE ARE TWO ADULTS WHO ARE EXCITEDLY WORKING IN TECH, AND EVERYTHING IS QUITE PREDICTABLE AS TO HOW MUCH WORK WE HAVE IN OUR RESPECTIVE FIELDS. BUT TO WHAT EXTENT SHOULD WE BE WORRIED ABOUT THE YOUNGER GENERATION'S PREPARATION AND WHICH KIND OF CAPACITIES SHOULD THEY DEVELOP IN ORDER TO NOT BE REPLACED BY ROBOTS?

Children are remarkable — how, in those first few years, have they learned so quickly? My car, which is pretty moderate… I was carrying some friends and one of them had a child, and I have a little digital screen at the front, and they assume they could swipe it. But even though the car is relatively new, it was not a touch or swipe screen. Suddenly, these children are making assumptions about how they're going to interact with the world.

There is going to be massive displacement of workers, no matter how optimistic I am about the emergence of new jobs, new opportunities, a new role for humans. The world is going to grow from about closing on 8 billion people right now to a peak we think will be about 11 billion. And a big chunk of that is going to be healthy young adults who want to work.

So, will those jobs be manual or routine? Probably not. The way the marketplace works is: If it's easily repeatable and it can be made at lower costs with robots, it's going to be — history shows that.

Which leads me to think kids need to be pretty good at technical skills, and the education they need has to be more sophisticated than it's been. History was kind: If a kid wasn't so good in school, there's still plenty of work. We could still do work that didn't require intense cerebral needs, but could be a manual in nature. And that's completely fine. Everybody's different and everybody has different desires.

> ***Our goal should be for all children to get educated, no doubt.***

But again, history shows us that education has created a better life for more people. And when education is more evenly distributed in a society, that society is more stable — it's more free, more equal. And fortunately, technology is democratizing education.

> ***So, it seems to me the best thing we can do is to ensure that more children in the world get educated. Our goal should be for all children to get educated, no doubt. They need access to technology to do that — not only to consume the education, but actually to write and demonstrate their skills with the technology. And then, probably, it should be more technical as time goes by, because that seems to me to be where humans will have the most value — at least, in the next few decades.***

PROFESSOR REICHENTAL IS BEARING THE MISSION OF DEVELOPING ACCESSIBLE EDUCATION TOOLS. RECENTLY, HE PUBLISHED A VIDEO LECTURE SERIES ABOUT QUANTUM COMPUTING ON LINKEDIN THAT WILL ADD UP TO AN EDUCATIONAL SERIES ON BLOCKCHAIN AND CRYPTOCURRENCIES, AND IS OFFERING A COURSE ON BLOCKCHAIN NEGOTIATIONS IN SPANISH WITH THE UNIVERSITY OF CALIFORNIA, BERKELEY.

By Kristina Lucrezia Cornèr

BLOCKCHAIN AND CRYPTO JOBS MARKET: 2018 VS. 2019 BY THE NUMBERS

Along with Bitcoin (BTC) price growth in 2019 (from $3,400 in February to $12,689 in June), some segments of the labor market related to cryptocurrencies and blockchain have also actively manifested themselves. Demand for lawyers has risen sharply, Facebook is actively hiring and the United States is breaking every record in terms of the number of job offerings. However, the overall picture is rather ambiguous.

Blockchain experts are still in demand, especially in the U.S.

According to a first quarter 2018 report published by the world's largest freelance network, Upwork, knowledge of blockchain technology came out on top among the specialties for which demand has grown the fastest. And the statistics presented by the international recruiting company Hired showed that global demand for blockchain engineers increased by 517% over the past year.

In 2019, the trend of demand for such specialists hasn't changed dramatically. The word "blockchain" in the labor market is still in trend — as it was fashionable in the beginning of the century to attribute the word "cloud" to job descriptions. Companies striving to be trendy publish more and more vacancies, and there are still not enough specialists in this field.

Blockchain and crypto job offerings dynamics for 2019 in numbers

According to the latest data from the international job search site LinkedIn, the total number of vacancies related to blockchain and cryptocurrency hasn't decreased since December 2018, but has instead increased. In total, as of the end of July 2019, companies have posted 16,668 offers, which is 2% more than last year.

The number of U.S. companies that hire blockchain specialists has grown even more. The U.S. remains the unchallenged leader in the number of such vacancies, and it is also breaking last year's records in 2019. According to the job search

website Glassdoor, as of late July, U.S. firms posted 2,907 job offerings, which is up 40% from 2018. Indeed experts confirm the increased number of blockchain job proposals, referring to an almost twofold increase:

> ***"According to our data, the crypto and blockchain market is far from dead — in fact, it's still rapidly growing. From February 2018 to February 2019, we saw the share of US job postings related to crypto, blockchain and Bitcoin grow 90%."***

However, if evaluating the share of these vacancies to the total number of offerings in the labor market, it occurs that the share of vacancies that contain the words "blockchain" and "cryptocurrency" has dropped over the last year by 12%, as analysts from Indeed reported to Cointelegraph.

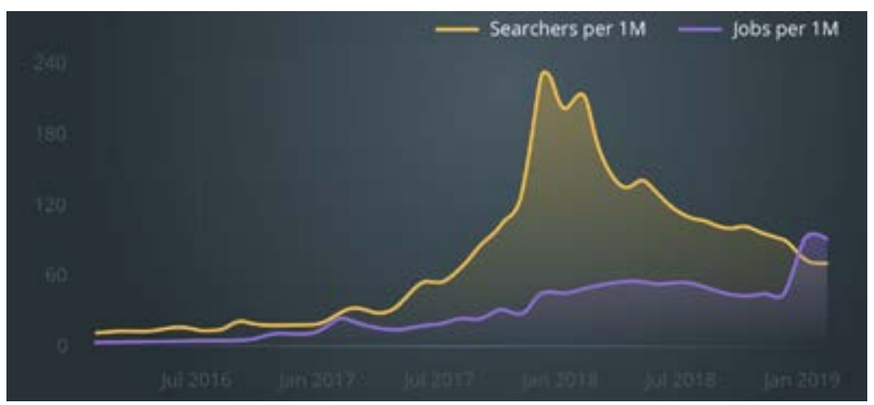
Blockchain and crypto job offerings dynamics for 2019

The reduction in the number of offers for blockchain specialists is also confirmed by data from such big recruitment resources as Glassdoor and AngelList, which show a decline of 11% and 18% respectively.

People began to search for blockchain jobs twice less. This trend was identified by Indeed analysts, who shared the comparative statistics with Cointelegraph. According to the data, the share of the blockchain- and cryptocurrency-related job searches has declined by 52% over the last year (June 2018–June 2019).

The experts also revealed a direct correlation between Bitcoin price and the number of people looking for this kind of jobs:

> ***"Not only did bitcoin reach an all-time high in December 2017, in February 2019 it had 37% of the value it did compared to the year before. Job seekers responded to the peak in bitcoin pricing with searches for roles related to Bitcoin, crypto and blockchain."***



Job seeker and employer interest in Bitcoin, cryptocurrency and blockchain roles over time

Job searches an offerings dynamics

Companies prefer full-time employees

The number of remote jobs in the field of blockchain technology has significantly decreased — 25 offerings in 2019 against 127 in 2018. Illuminates, a company that is developing a decentralized business relations platform, attributed a similar tendency to demands on candidates, which companies began to increase soon after the number of incompetent specialists started growing in the market. The company told Cointelegraph:

> ***"Even in startups sectors there is decrease of remote jobs, only 29.5% vacancies has tag 'remote.' In our opinion this situation is related to unprofessional subcontractors with fake portfolios, problems with partnerships, co-founding relations, unfair clients promises and payments delays, and for sure the problem is always near with area of investments, bubble startups and laundering founders spendings. And it's not some local problems, each company or founders personally have come across this at least once."***

How much do blockchain specialists earn?

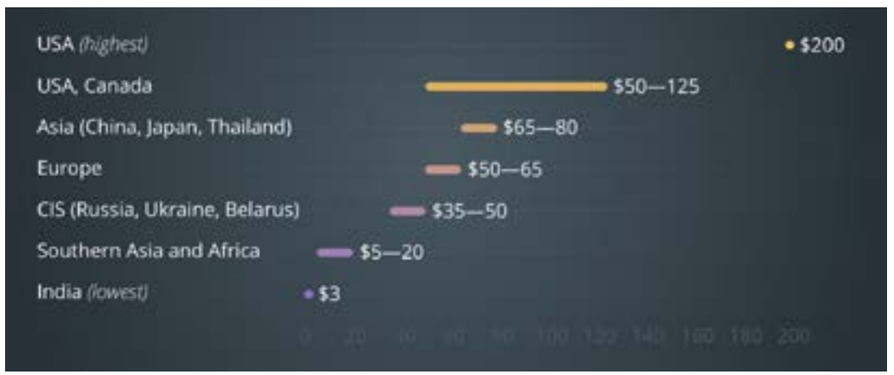
Judging by the consolidated data collected by Glassdoor and Indeed, blockchain specialists have the same salary as in the previous year.

According to Glassdoor, disclosed salaries range from $17,000 all the way up to $271,000 per year. The major pay of job offerings falls within the $81,000 to $144,00 range per year (404 offerings), as TeQatlas analyzed. The salary range according to Indeed was $75,000–$90,000, with an average value of $82,500. In comparison to last year, the average salary for such employees was $84,884, as Glassdoor reported in August 2018.

Average annual blockchain specialist salary (2019)

As can be seen, the salary index in 2019 hasn't been affected by declining prices or the influx of job seekers from South Asia (India, Nepal, Pakistan, etc.), who offer their services on sites like Upwork for $10–20 per hour. At the same time, the highest rate on average is set by applicants from the U.S. — $100 per hour and more.

As of July 28, 2019, it is cheapest to hire a full-stack developer from India. The job seeker offers his/her services for only $3 per hour. The highest price for freelance work in the crypto space goes to intellectual property and cryptocurrency attorneys from the U.S.: $200 per hour.



Blockchain specialists rates, by regions

Researchers at TeqAtlas analyzed open vacancies for blockchain-related jobs for the current year. As it turned out, the highest salaries are still paid in the U.S. ($109,773 on average), a little less is received by specialists in Asia ($98,500), while the average salary of a European employee ($57,500) is 30% lower than that of an American. At the same time, job seekers from other countries may get a higher-paying job by applying for a remote vacancy.

Average blockchain job salaries by locations

Developer salaries are the same, while the requirements are getting stricter

The major part of the blockchain and cryptocurrency jobs market remains focused on developers, and this continues to be the area of most demand. The "U.S Emerging Jobs Report" published by LinkedIn back in 2018 shows that demand for blockchain developers has grown 33 times over the previous year.

As of Oct. 23, 2018, the average salary for a blockchain developer was reported to be $127,000, according to Janco Associates, a consulting firm that conducts salary surveys.

Judging by statistics shared by job recruitment firm Hired, the salary for blockchain developers ranges between $67,000 and $155,000 a year, depending on the region.

In early 2019, the situation has changed very little. In January, the median annual salary for blockchain developers was $132,000, with the most experienced developers earning $76,000 and upward.

However, six months later, judging by the data from ZipRecruiter as of July 22, 2019, the average annual salary for a blockchain developer in the U.S. has slightly dropped to $126,020 a year. This is 1–5% less than in the same year. At the same time, if taking a selection of the most popular vacancies posted on the same website, it turns out that in 75% of cases, companies are willing to pay employees $136,000. And this is even more than in 2018.

The chance to get "the half–million dollar job," as it was two years before, however, seems to be less realistic today, as the analytics show that the average pay range for a blockchain developer varies little (about $19,000). This suggests that, regardless of location, there are not many opportunities for increased pay or advancement, even with several years of experience.

In addition, analysts from Illuminates told Cointelegraph about a large influx of developers from poor regions — such as Nigeria, Pakistan, India and Kenya — who offer "extremely low prices and product quality." This, according to experts, entails a decrease in demand for third-party developers.

Lawyers much-needed to work with regulators

The demand for legal professionals who specialize in blockchain affairs is constantly growing, and finding such employees is not easy, according to Brian Burlant, managing director of legal recruiting company Major, Lindsey & Africa.

The fact is that it is very difficult to find specialists who understand what blockchain is and how it is used, especially when it comes to the operation of cryptocurrencies. And now, when companies whose activities are related to digital money have to deal with regulators more and more often, the demand for lawyers has risen sharply.

For example, Coinbase is willing to pay up to $386,000 per year for a role named “Senior Associate General Counsel — Regulatory,” whose responsibility will be “managing the company's relationship with federal regulators, including the SEC and the CFTC.”

Many lawyers that eventually come to the blockchain industry are professionals who have worked with the legal issues of regulating distributed ledger technology and cryptocurrencies at the governmental level. And experts who understand how digital assets function and are regulated represent the most value.

Commenting on Burlant’s opinion on the labor opportunities for such specialists, Mary Young, partner of the Zeughauser Group, said that blockchain lawyers have become very popular since December 2017, and when many cryptocurrencies fell in price, many of such specialists quietly left the blockchain sphere for the companies they had worked for before. Similar waves of inflow and outflow of specialists were observed during the dot-com bubble of the 1990s.

Jake Chervinsky, a legal expert, pointed out that legal advocates often take pseudonyms when working on various issues. According to his tweet:

> ***“I recently heard someone refer to the use of a pseudonym as 'sketchy.' I couldn't disagree more. Pseudonyms are often critical for safety & security and can make the difference between free speech or none at all. If these are fundamental rights, then so too is using a pseudonym.”***

This can be explained by the fact that not all lawyers dealing with blockchain and cryptocurrency issues want to disclose their involvement in this kind of business, which means that it becomes harder for recruitment agencies to find them.

The more expensive Bitcoin is, the higher the salaries are

Even if you don’t get promoted, your salary can significantly increase if you get paid for your work in cryptocurrency. For example, specialists who saved their salary of $2,000 dollars in December, January and February would have increased it 3.5 times and turned $6,000 into $21,000.

The popularity of getting paid in cryptocurrency is confirmed by the statistics presented by Bitwage, which provides services to global companies for paying employees in digital currency. It’s reported to currently process $2.5 million in monthly volume for contractors and full-time employees, and the sum of money paid to employees via the service increased from $31 million in 2018 to $50 million in July 2019, according to information the company’s representatives shared with Cointelegraph.

Moreover, several blue-chip companies — including Amazon, Google and Apple — have employees that use Bitwage to automatically convert their cash salaries into cryptocurrencies. Indeed, Bitwage allows ordinary companies and specialists to resort to cryptocurrency payments absolutely legally. In the U.S., companies can even settle payroll taxes — and since January, have also been able to cover such benefits as health insurance.

Despite the instability of the crypto market, global companies see great potential in the blockchain technology itself. This year, corporations are breaking records in opening and expanding departments and hiring staff, with new vacancies being mostly related to research and development.

According to AngelList, at the moment, at least 1,500 crypto startups, which combined have raised over $3.7 billion from initial coin offerings, are looking for employees in the U.S. alone.

The most active companies moving in this direction are IBM, Cisco and Accenture — together, they account for about 1,000 open vacancies.

Company	Vacancies	Company	Vacancies	Company	Vacancies
IBM	428	Latoken	64	KPMG	45
Cisco	288	Ripple	62	Air France	40
Accenture	213	Block.one LLC	59	Facebook	40
Oracle	144	Blockchain	53	Luno	38
PwC	140	Amazon	53	Verizon	35
Ernst & Young	132	Overstock	52	Capital One	34
Coinbase	91	Consensys	48	Chain Analysis	33
Binance	73	Deloitte	47	Visa	31
SAP	66	Kraken	47	Axiom Zen	27
Collins Aerospace	65	CGI	45	BitFury	20

Top-30 employers by number of blockhain related vacancies

The highest wages, whereas, are paid by the companies specializing exclusively in cryptocurrencies and blockchain. Other companies are not only growing, but also actively paying their salaries in cryptocurrency. For example, the Kraken exchange claims that it paid salaries in Bitcoin to 250 of its employees in April, showing there is a growing demand for getting paid in cryptocurrency:

> ***“Kraken paid 250 salaries in bitcoin in April and more employees are opting for crypto every month.”***

At the moment, Kraken has about 800 employees. So, judging by the exchange’s revelation, about 30% of them receive Bitcoin as payment for their work. Notably, it’s not the only exchange paying in crypto. As reported by Cointelegraph on Dec. 6, 2018, crypto exchange Binance said that at least 90% of its employees were paid in the company's cryptocurrency.

An increasing amount of new blockchain jobs has been recently recorded at the Facebook headquarters. On March 25, 2019, it was reported that the social media giant had posted 22 new vacancies over the past month and was actively hiring a lot of specialists for expanding its new blockchain department. These are specialties mainly connected with management and programming.

Blockchain jobs are here to stay

Well, this doesn't mean blockchain geeks and crypto traders are coming for our jobs, but the labor market is likely to see continued growth in fields related to DLT and digital currency.

However, if the cryptocurrency market falls sharply, the amount of job searches may further decrease, as Tal Vinnik — a content strategist at Indeed Prime, a service that connects tech talent to leading brands and startups — presumes:

"For the first time, the number of jobs per million exceeded the number of searches per million. It could be reasonable to assume that if bitcoin drops dramatically again, a candidate looking for a blockchain role would run into less competition than they would after a large increase. There also does appear to be a skills shortage as enterprise projects have matured over the last three years."

The same situation may affect the trend of getting paid in cryptocurrency. Overall, Bitcoin payments were popular at one point in time, when the market was down, but after a major rise in price, they may become far less attractive due to the risk of a major fall.

By Julia Magas

COINTELEGRAPH
The future of money

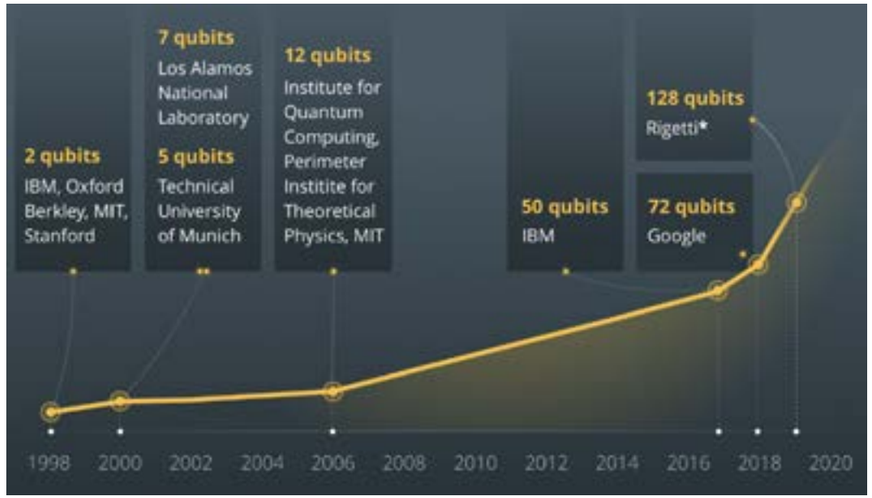
QUANTUM COMPUTING VS. BLOCKCHAIN: IMPACT ON CRYPTOGRAPHY

The major selling point of blockchain and its applications is that cryptographically secured distributed ledgers are virtually “unbreakable” under normal circumstances, given the current state of computational technology. Its validity, however, is heavily dependent on the “state of technology” assumption. Should a paradigmatic shift in computing occur, contemporary blockchain-based systems may become vulnerable to threats not accounted for in their design. But how urgent is the threat of this happening any time soon?

The strides that physicists have been making for the last three decades toward building an operational quantum computer could soon contribute to such a shift. As the milestone called “quantum supremacy,” in which a quantum computer outperforms a traditional computer on a specific task, could be reached any day now, the question of whether prospective quantum-based devices are capable of “killing” blockchain comes into the spotlight.

A primer on quantum computing

A quantum computer is any device that uses the principles of quantum mechanics to perform calculations. To store and manipulate information, regular computers use binary units called bits, which can represent one of two possible states: 0 or 1. Quantum machines rely on quantum bits (or qubits), which can be both a 0 and 1 at the same time. This phenomenon, called superposition, allows such devices to perform certain tasks much faster than its bit-based counterpart.



Number of Quibits achieved by Date and Organization

Another foundational term in quantum theory is entanglement. When two particles are entangled: They exist in the same quantum state, and it changes in state if one prompts its peer to change accordingly, no matter how far apart the two are in physical space. Pairing qubits this way leads to the exponential growth in the quantum computer’s computational power.

The state of superposition, which is necessary to perform calculations, is difficult to achieve and enormously hard to maintain. Physicists use laser and microwave beams to put qubits in this working state and then employ an array of techniques to preserve it from the slightest temperature fluctuations, noises and electromagnetic waves. Current quantum computers are extremely error–prone due to the fragility of the working condition, which dissipates in a process called decoherence before most operations can be executed.

Quantum computational power is determined by how many qubits a machine can simultaneously leverage. Starting with a humble two qubits achieved in the first experiments in the late 1990s, the most powerful quantum computer today, operated by Google, can use up to 72 qubits.

Quantum computers and blockchain

Acknowledging all the conventional reservations, the idea of blockchains’ immutability and unmatched security is widely accepted: It underlies the public’s trust in digital assets and promotes mass adoption. However, the advent of quantum computing could potentially jeopardize the integrity of public-key cryptography, which is the backbone of blockchain security.

While the range of quantum computers’ potential applications is vast, the one most relevant in the context of blockchain technology and cryptography more generally is the capacity to run specific algorithms much faster than any existing supercomputer. One of the most widely discussed presumed use cases is running the famous Shor’s algorithm for factor decomposition, which could potentially render many contemporary encryption techniques obsolete.

As a group of researchers from the Russian Quantum Center observed in an article for the journal Nature, one potential risk stems from the fact that blockchain security heavily relies on one-way mathematical functions — the ones that are easy to run, yet much more difficult to calculate in reverse. Such functions are used to both generate digital signatures and validate transactions on the ledger.

A criminal equipped with a functional quantum device would be able to perform reverse calculations immensely faster, which would enable them to forge signatures, impersonate other users and gain access to their digital assets. In the context of mining, such a malicious actor could take over the process of updating the ledger, manipulate transaction history and double-spend coins.

The Russian researchers suggested that the architects of encrypted systems should start taking precautions against this threat immediately. One solution could be replacing conventional digital signatures with quantum-resistant cryptography — the kind of security algorithms specifically designed to withstand an attack from a sufficiently powerful quantum computer. Another remedy, the Russian physicists proposed, will only be available with the advent of a quantum internet, which is still several decades away. This prospective wireless communication architecture, based on the connection between remote entangled quantum particles, will unlock a wealth of new blockchain models and designs.

This is somewhat consonant with the mind-bending idea that Del Rajan and Matt Visser from the Victoria University in New Zealand expressed in a recent research paper. They proposed to forgo the use of quantum cryptography and leap straight to making blockchain a quantum-based system itself. Their model describes a blockchain based on qubits entangled not just in space, but also in time. The attempt to retrospectively alter the record of transactions, encoded by the history of a single particle's states over time, would be impossible without destroying the particle altogether. The realization of this model, however, would be impossible until a quantum internet is up and running.

> ***And there's been nothing more dramatic than the impact of our cities on humanity in terms of a positive trajectory.***

Practitioners weigh in

While the futuristic solutions that academics propose may be decades away, a lot of hands-on research and development in quantum computing and quantum cryptography is happening right now. The experts working with quantum computing applications surveyed by Cointelegraph differed in their views on how immediate the quantum threat is. Yaniv Altshuler — an MIT researcher, and CEO and co-founder of predictive analytics platform Endor Protocol — said:

> ***"Quantum computers are becoming incredibly powerful, and they are advancing faster than most people expected. However, their capabilities will not break the blockchain. Each year, when new hardware is released, it rekindles concerns about the blockchain's integrity, but there is no evidence that quantum computing can compromise the blockchain."***

Stewart Allen, the chief operating officer at quantum computing firm IonQ, believes that by the time a quantum computer grows to become sufficiently powerful to imperil the integrity of today's blockchains, security systems will have moved to algorithms capable of containing them:

> ***"There is no real threat of quantum computers breaking blockchain cryptography in the short-term. If and when this does happen, cryptography will have moved to more quantum-proof algorithms. We're at least a decade from quantum computers being able to break blockchain cryptography."***

Others, however, do not quite share this optimistic view.

ILCoin's executive manager, Norbert Goffa, expressed his concern over the potential emergence of quantum-powered mining pools:

> **"If somebody has a quantum-based mining pool, it's easy to dominate others. […]Today we do not have any quantum-based mining machines. On the other hand, a lot of companies have been working on quantum-based computing technology. We believe that in the next five years it could be real. Maybe less, who knows?"**

Rakesh Ramachandran, CEO and co-founder of Qbrics Inc, emphasized that quantum computing is poised to have an effect in virtually every sphere in which cryptography is used. In the case of blockchain technology, he said, we might expect a systemic shift:

> ***"Quantum computers will be redefining cryptography of not only blockchain but wherever there is an application of cryptography including simple things like an online banking website. There is a considerable research and work being done to mitigate the effects and move to quantum-resistant cryptography or post-quantum cryptography.***
>
> ***"However, the challenge of blockchain is not just about the threat that quantum computing represents but scope of how blockchain will migrate to the new version of cryptography."***

All experts provided surprisingly similar estimates of how much time we have before quantum computers can pose a threat to blockchains' integrity, varying within a range from five to 10 years. They were also fairly consistent in their recipes for dealing with potential quantum-powered attacks: Most agree that a gradual shift to quantum-resistant cryptography will be necessary, as well as building infrastructure that will support it. Blockchains will have to evolve, but it is unlikely that quantum computing technology will fundamentally threaten their existence.

By Kirill Bryanov

INTERNET, BLOCKCHAIN AND KNOWLEDGE

WITH WIKI CO-FOUNDER LARRY SANGER

Intellectual of the innovative industry, innovator of the concept of intellectuality, experimentator with technologies and educator by dedication, before co-founding Wikipedia in 2001, Larry Sanger studied and taught philosophy, being interested especially in epistemology — i.e., the science of knowledge.

It was in college that he started thinking of the internet as a potential way of decentralizing knowledge. His early project in this regard was a web forum for discussions between tutors and students, who could thus communicate outside the usual academic environment. Sanger explained:

> **"THE THING THAT DRIVES ME FORWARD IS ALL OF THE POSSIBILITIES THAT THE INTERNET MAKES POSSIBLE FOR ORGANIZING PEOPLE TO CREATE A NEW KNOWLEDGE RESOURCES. JUST THINK OF HOW THE OXFORD ENGLISH DICTIONARY WAS CREATEDL WHEN I READ 'THE PROFESSOR AND THE MADMAN,' I WAS SURPRISED AT HOW SIMILAR IT SEEMED TO BE TO THE EARLY YEARS OF WIKIPEDIA, AND THAT VISION OF ORGANIZING PEOPLE FROM ALL AROUND THE WORLD TO CREATE SHARED KNOWLEDGE RESOURCES IS REALLY WHAT DRIVES ME FORWARD. THAT'S THE VISION THAT INSPIRES ME. IT HAS NOTHING TO DO WITH MAKING MONEY. THERE'S MUCH MORE IMPORTANT THINGS AT STAKE HERE."**

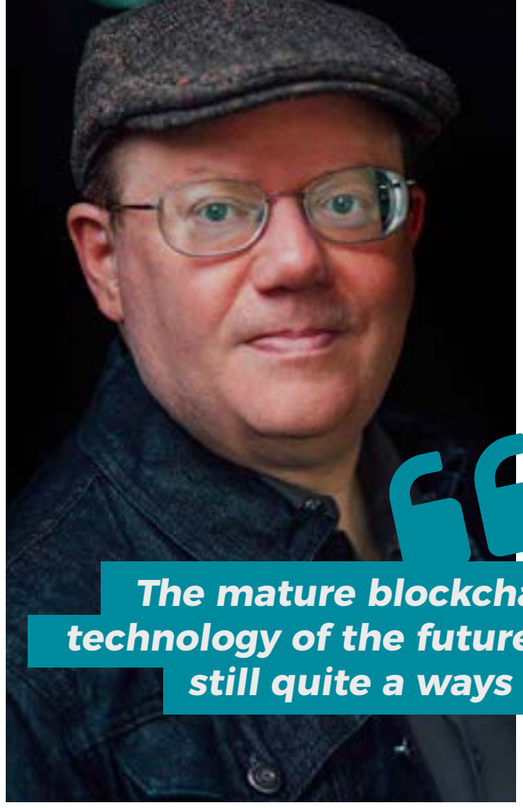
Decentralization

Sanger conducted his first "fork" in 2006 when he launched an alternative to Wikipedia, Citizendium, which rejected anonymous editing and introduced an expert review process. The project was ultimately unsuccessful, but Sanger kept developing educational projects as well as a crowdsourced news portal before becoming the chief information officer of Everipedia in 2017 — an encyclopedia of unrestricted topics, based on blockchain technology.

As of 2019, the project has almost completed phase one of its move to the blockchain.

A year ago, the EOS mainnet was launched, an airdrop was conducted and now the project is ready to launch. Sanger spoke about Everipedia, saying:

> **"I THINK IT'S GOING TO TAKE SEVERAL YEARS BEFORE THERE ARE MATURE DECENTRALIZED APPS THAT A LOT OF PEOPLE ARE ABLE TO USE. WE'RE STILL FIGURING OUT A LOT ABOUT BLOCKCHAIN. YES, THERE ARE DAPPS THAT WILL WORK PRETTY WELL, BUT I I THINK, ULTIMATELY, THE MATURE BLOCKCHAIN TECHNOLOGY OF THE FUTURE IS STILL QUITE A WAYS OFF."**



The idea of decentralized information is evident throughout all his projects. Thus, on the eve of the Fourth of July — the United States' Independence Day — Sanger wrote the "Declaration of Digital Independence," calling for a social media strike via Twitter aimed at decentralizing social media platforms.

Complementing the internet with blockchain

According to Sanger, the internet of today could not have been created by any modern executive in Silicon Valley — and no, Mark Zuckerberg is not an exception. Sanger went on, saying: "They wouldn't be capable, they don't have the temperament. They're too controlling. They don't understand the whole idea of bottom-up."

And the power of the internet is enormous. As Sanger said, blockchain technology is adding "transparency, accountability and, of course, the incentives that are provided by tokenization," but "there is nothing magical about a blockchain technology that makes it the only way to decentralize online activity."

However, the qualities of blockchain consist for Sanger of "being a way of giving financial incentives to open-source developers." These concepts have not really gone

mainstream “because most of the work done on open-source software is done by volunteers. There isn't a lot of money involved. Blockchain makes it possible for us to have the same sort of decentralized development and participation that open-source software allows, but it adds onto that financial incentives for users — and that's pretty exciting.”

Blockchain in 10 years

To Sanger, the blockchain industry needs to pay a lot more attention to user experience. He said, “It has to be made just as simple as any ordinary app or website.” And it is when out-competing traditional apps on their own terms that people can start caring about the fact that these apps are built on a blockchain. Sanger explained:

> **“MOST PEOPLE JUST DON'T CARE ABOUT BLOCKCHAIN AT THIS POINT. MAYBE THEY SHOULD, BUT THEY DON'T. AND THAT'S JUST A FACT THAT WE HAVE TO DEAL WITH.”**

He continued:

> **“WE HAVEN'T FIGURED OUT WHAT THE BEST WAYS OF USING THE TECHNOLOGY ARE. WE HAVEN'T ESTABLISHED SYSTEMATIC PROGRAMMING LANGUAGES. WE DON'T KNOW WHAT THE BIGGEST COMPANIES ARE GOING TO BE. THERE IS SO MUCH THAT'S UP IN THE AIR AT THIS POINT. I THINK THE WORLD OF BLOCKCHAIN IS GOING TO LOOK VERY DIFFERENT IN 10 YEARS AND WE HAVE NO IDEA WHAT THAT COULD BE LIKE.”**

Where there is blockchain, there is crypto. Thus, commenting on Donald Trump’s recent tweets about crypto, Sanger left a meaningful “boooooo.”

Sanger concluded by saying:

> **“I'M NOT A CRYPTO INVESTOR, REALLY. I'VE DONE A LITTLE BIT OF THAT JUST IN ORDER TO UNDERSTAND WHAT IT'S ALL ABOUT. I BELIEVE IN THEM. I REALLY DO WANT THE MONETARY SYSTEM — OR RATHER THE MONETARY SYSTEMS — OF THE WORLD TO BE DECENTRALIZED AND TAKEN OUT OF THE HANDS OF GOVERNMENT. I THINK THAT WOULD BE FANTASTIC.”**

By Kristina Lucrezia Cornèr

CRYPTO MARKET TRADING

INSIDE LOOK FROM THOSE EARNING A LIVING OFF IT

Since Bitcoin (BTC) came into the world back in 2009, the digital asset industry as a whole has grown quite exponentially — with the market reaching its apex on the break of 2017–2018. Additionally, in the midst of all this, there has been a rise in the crypto trading sector, with the total capitalization of this domain currently pegged around the $277.90 billion mark.

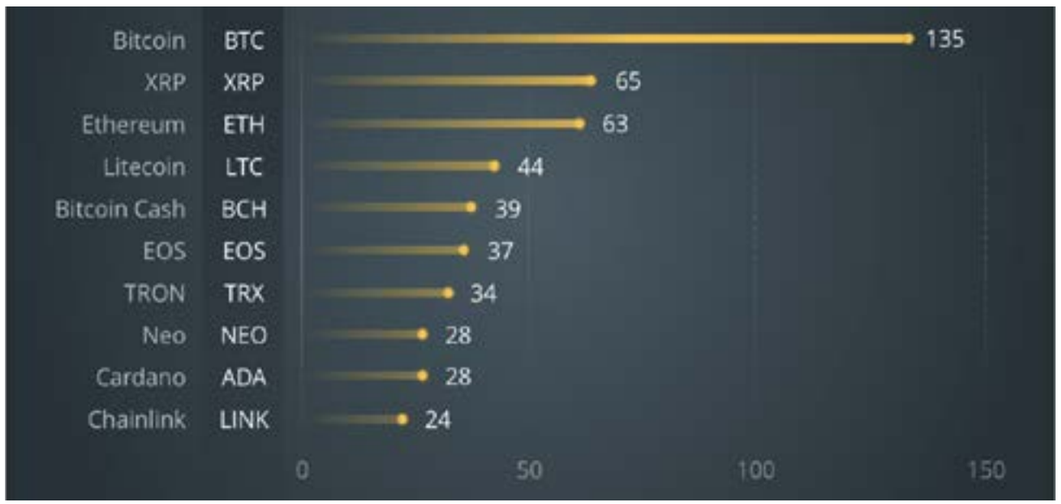
In its most basic sense, cryptocurrency trading can be compared to forex trading because it allows enthusiasts to purchase digital assets using fiat currencies. Not only that, investors can also choose to make use of a number of strategies in order to increase their returns in the easiest manner possible. In this regard, one of the approaches that has garnered a lot of popularity over the past couple of years is that of investors using Twitter and Google trends data to predict the price movements of digital currencies such as Bitcoin, Ether (ETH), XRP, etc.

On this very subject, The Southern Methodist University, Texas released a study back in 2018. In their report, the researchers were able to establish a clear correlation between the search activity of crypto enthusiasts in relation to BTC and ETH (on Google and Twitter) as well as their active trade values. For example, the report states that there is a link between the price of Bitcoin and the number of tweets associated with the flagship asset preceding a major price change. The researchers then go on to note:

> ***"Both Google Trends and tweet volume were highly correlated with price. In addition, the correlation held during periods of increasing and decreasing prices suggest that the relationship is robust to periods of high variance and non–linearity. The findings of our analyses show that sentiment analysis is less effective for cryptocurrency price changes in an environment in which prices are falling. This is because tweets about cryptocurrencies tend to be objective in nature (not having a clear sentiment) or positive regardless of price changes."***

With this information in mind, it is worth pointing out that there currently exists a plethora of tools that can be used to gauge the sentiment of the market in relation to the tweets associated with a particular crypto asset. For example, the Crypto Fear and Greed Index as well as CoinTrendz allow users to look at and analyze a number of indicators — such as market volatility, online surveys and social media tweets — to determine the direction in which the market at large (or even a particular currency) may be heading.

Below are the top cryptocurrencies searched on the day of publication.



Top-10 most-mentioned cryptocurrencies on Twitter

Rise of the social media brigade

Since 2015, there has been a massive increase in the number of autonomous analysts who have been providing investors with their insights as to how the future of the market may play out. To provide some perspective as to how popular these solo analysts really are, people like Dan Zanger and Mark Minervini currently have more than 90K followers on Twitter. Similarly, pseudonymous account holders such as CryptoYoda, Zissou and Mocho17 have more than 220K, 124K, 110K online followers respectively.

Cointelegraph got in touch with Bitcoin investor/trader Cryptomelette, whose trading track record so far has been stellar, according to his claims. This is because at the start of the year, he supposedly had just 1.8 BTC, which he then proceeded to grow to a whopping 105 BTC (approximately $1.2 million) using a vast array of investment techniques that he developed by observing a number of other traders.

As with various other famous crypto proponents, Cryptomelette first became interested in Bitcoin around 2013 — a period when the preeminent crypto was first starting to gain widespread media prominence. At the time, he says there were a lot of "unscrupulous people too eager to give their advice with no skin in the game." However, after sifting through the sand for a few months, he started to follow analysts such as CryptoDonAlt, CryptoCred, VentureCoinist, CryptoTrooper and FilbFilb, who he believes still dole out excellent crypto investment advice. When asked about what drew him to these individuals, Cryptomelette stated:

> ***"There are quite a few traders and commentators I follow and look up to but CryptoCred, VentureCoinist, FilbFilb come to mind as standouts — not only for their unique and insightful commentary on the market, but also their integrity, which is often in short supply in the crypto world. I never copy anyone blindly, and ultimately I make my own trading decisions which are often at odds with traders I respect."***

When asked about the strategies he used to turn over a profit he claims was more than 100 Bitcoins within a period of just six months, he said that his approach to trading was dynamic and that he was constantly tweaking his strategies by understanding the psychological dimensions of the game. He went on to say:

> ***"Self mastery, emotional awareness, and the development of a proper attitude are all crucial. The paradoxical ability to be fluid, yet disciplined and systematic is something many traders struggle with and took me a while to fully grasp. The often heard mantra 'strong opinions, weakly held,' captures this beautifully. Having patience has become something of a platitude, but it cannot be overstated. This area of my trading has vastly improved. Other aspects of my trading that have improved my bottom line are the ability to quickly and ruthlessly cut losers, to let winners run, and to focus on the larger time frames (thereby not getting shaken out of good entries due to low time frame noise)."***

Adaptability and dynamism are essential to trading success

On the subject of continued success and how one can make a living playing the trading game, Cointelegraph also spoke with CryptoYoda — a Twitter analyst — who in no uncertain terms told us that, in order for a person to succeed in this field, he/she has to dedicate a lot of time and energy to learning the craft. The analyst said:

> ***"Research what is it all about, understand why this technology is a global game changer. While you are researching that; find out why the current financial system that we have cannot come to a good end. The information is all out there, it just needs the commitment to dive into it. For those few who are ready, willing and able to dig through those vast amounts of information; you will have a glorious future."***

Some of CryptoYoda's key tips designed to help budding day traders flourish in this field include:

- Invest small, but smart: Buy fractions of Bitcoin every day, week or month — no matter how big the amount. If you do so, you have skin in the game, and countless opportunities will be there to multiply your initial investment in the time to come.

- Be aware of the market: There will probably be around

10 to 15 blockchains dominating this space in some years from now. Find those. Keep away from hype and pseudo-decentralized coins.

- Prioritize: Data is the most precious asset in today's ever-digitizing world. Buy anon-coins early so you will have the privilege to send money without leaving a trace — which will be something that only the crypto-rich will be able to afford.

- Get with the times: Learn to trade so you will be ready when the era of investment enters its golden age.

- Expand your knowledge base: Start to dabble in coding so that you can create novel offerings within this new decentralized system.

Talking about the most common mistakes he made during the early part of his trading career, CryptoYoda was quick to note that the times he encountered the most financial uncertainty was when he failed to stick to his predevised plan of action. He said:

> *"Most common mistakes on my own journey were not sticking to my own analysis/trading plan and entering too early (I tend to be right on direction, but too early in timing). Knowing this alone however makes you observe these particular situations more carefully which in turn is profitable."*

So, what lies ahead for the crypto market?

Talking about direction, CryptoYoda believes that the best strategy moving forward is to patiently wait for the emergence of what he describes as "global FOMO." He is of the belief that when BTC embarks on its next bull run, investors will be able to understand what digital scarcity really means — since everybody will be scampering to get their hands on even a fraction of a Bitcoin.

He also added that, with the legacy financial system facing a lot of stiff competition from emerging blockchain technologies, it is only a matter of time until people start to realize what is really happening and how it will impact their personal lives. According to CryptoYoda:

> ***"For the people who are already invested in the space and for those nocoiners thinking about entering crypto for the first time; there could be not a more glorious time. Maybe you refused to buy BTC at 3k and saw it rallying up to 14k, but do not forget: if you missed this boat, there is another train departing soon... Coins other than BTC will have a great time in the future, especially when it comes to coins having anonymity features. Here once again is your chance to sniper the bottom, ride it to global fomo, then sell your bags if you have to. If you do it right, this is the only investment you would ever need to do, but only a few have the guts to actually go for it. That's the game and how it always has been."***

On the issue of future-proofness and how one can stay abreast with all of the latest events in the world of crypto, Cointelegraph also spoke with Nicola Duke (aka NicTrades) — an independent digital currency specialist who teaches her trading methods via her online Strategy Group. She believes that in order for a person to continually succeed in this field, they need to learn some definitive trend-following strategies so that when prices stop going up, one is sure to make some profit.

Nicola, who has more than 93K followers on Twitter, believes that, owing to the power of the internet, countless information pathways now exist that one can use to make informed investment decisions. She went on to say:

> *"I think it's amazing what you can learn for free on the internet."*

By Shiraz Jagati

DIGITAL YUAN

WEAPON IN US TRADE WAR OR ATTEMPT TO MANIPULATE BITCOIN?

After a short stay in the red zone, Bitcoin (BTC) has recovered toward $12,000, with traders turning bullish as ever. Experts call the United States–China trade war a key reason for the main cryptocurrency's price fluctuations. Fuel to the fire has been added by the recent announcement by the People's Bank of China (PBoC) of plans to get ahead of the U.S. and Facebook's Libra by issuing a national cryptocurrency.

Chinese government is set to digitize yuan, challenge U.S. and Libra

As Cointelegraph reported, the PBoC plans to focus on developing its own legal digital currency. On Aug. 2, during a video conference devoted to discussing financial tasks for the second half of 2019, heads of financial and economic institutes in China touched upon the topic of cryptocurrencies. The country's central bank announced its intention to accelerate the development of its own digital currency and also confirmed its plans to allocate more resources to the implementation of this task.

It is notable that the decision of the Chinese bank to intensify the creation of a national cryptocurrency was preceded by the hotly debated development of the Libra coin. Initiated by Facebook in 2019, the project is now actively being lobbied for in the U.S. government, but without any results so far.

In July, Wang Xin, director of the PBoC Research Bureau, said that, with the development of the Libra cryptocurrency project, the People's Bank of China should accelerate the growth of its own digital currency, which it has been working on over the past few years. Wang believes that the risks Libra bears for the traditional financial system will force regulators to devote many more resources and forces to develop its digital currency. Wang asked:

> **"If [Libra] is widely used for payments — cross–border payments in particular — would it be able to function like money and accordingly have a large influence on monetary policy, financial stability, and the international monetary system?"**

In particular, China is concerned about which currencies Libra will be tied to and what role the U.S. dollar will play in this project. Wang said:

> **"If the digital currency is closely associated with the US dollar, it could create a scenario under which sovereign currencies would coexist with US dollar–centric digital currencies. But there would be in essence one boss, that is the US dollar and the United States. If so, it would bring a series of economic, financial and even international political consequences."**

Former PBoC Chairman Zhou Xiaochuan also believes that the concept of a global digital currency introduced by Facebook that can be exchanged into fiat money threatens existing cross–border payment systems and could weaken the position of national currencies, which he spoke about at a conference in Beijing, as reported by the South China Morning Post.

According to Zhou, Chinese authorities need to strengthen the national currency and consider the Hong Kong model to create a digital renminbi, which involves issuing money through commercial enterprises under the supervision of the central bank. Some analysts have already expressed the belief that technology giants Alibaba and Tencent may be assigned such a task. Large corporations in the country appear to be supportive of the ideas coming from government members, as Huawei CEO Ren Zhengfei commented:

> **"China can just issue our own version of Libra. Why should we wait for others to do it? The power of a country is always stronger than that of an Internet company."**

Stablecoin to support the local economy

A future national cryptocurrency may be issued in the form of a stablecoin tied to the yuan (also called the renminbi). Researchers at the PBoC published a review of recent initiatives in this area back in October last year. Most of the coins discussed in the material are pegged to the U.S. dollar, such as Gemini Dollar (GUSD) and Paxos Standard (PAX). The researchers are convinced that the development of cryptocurrencies tied to USD strengthens the role of the dollar in the global monetary system, while also having a negative impact on other fiat currencies. According to the researchers:

> **"If the stablecoins tied to the U.S. dollar end up being widely recognized by the market and prove their applicability in the real economy, we will have to redouble our research efforts in this direction, as well as in studying the relevant experience. This is necessary to support local institutions and issue stablecoins tied to the renminbi."**

At the same time, the authors note that stablecoins still have a long way to go before the financial system begins to feel any significant influence from new assets. Star Xu, the founder of cryptocurrency exchange OKCoin, expressed a similar point of view in his post on Weibo, writing: "The dollar–pegged #stablecoin regulated by the US government will strengthen the penetration of the US dollar 100 fold."

Bitcoin is growing due to the yuan's rate falling

Analysts have drawn parallels between the declining rate of the yuan and Bitcoin's growth. The price of the preeminent digital currency rose sharply the very moment when the Chinese currency fell by 7% to an 11–year low. On Aug. 5, Bitcoin's price surged to $11,786, with the daily increase amounting to an 11% gain.

Correlation between yuan's fall and Bitcoin's surge

U.S. President Donald Trump alleged on Twitter that the Chinese government is manipulating the price of the renminbi:

> **"China dropped the price of their currency to an almost a historic low. It's called 'currency manipulation.' Are you listening Federal Reserve? This is a major violation which will greatly weaken China over time!"**

As financial analysts suggest, the renminbi declined due to investors' concerns about a new round of escalation in the trade war between China and the U.S. This happened a few days after Trump introduced additional tariffs on goods imported from China. Now that U.S. products could become more expensive for Chinese consumers, a lower exchange rate might adversely affect U.S. exporters. The prices of U.S. stock futures have already declined, while the cryptocurrency market has demonstrated the opposite tendency.

Some analysts have postulated that the reason for this dynamic could be because Chinese investors use Bitcoin as a means of saving money. Simon Peters, an analyst at trading platform eToro, suggested that Chinese investors could want to diversify as the yuan fell. According to Peters:

> **"Given that Chinese investors make up a large proportion of crypto investors, there's a strong possibility some are backing bitcoin's chances against the yuan."**

However, Peter Schiff, an economist and CEO of brokerage company Euro Pacific Capital, rejected this explanation, claiming it was more about speculation rather than about real need:

> **"CNBC is trying its best to dupe its audience into buying Bitcoin. Despite gold being a much larger market, CNBC devotes far more airtime to Bitcoin. The Chinese aren't buying Bitcoin as a safe haven. Speculators are buying, betting that the Chinese will buy it as a safe haven!"**

The internet says...

An ambiguous statement made by the PBoC regarding the creation of a national cryptocurrency has sparked intense discussion around the world. Several points of view, primarily negative, have appeared on the internet in response. Some users suggested that both the U.S. and China need cryptocurrency to strengthen control over their citizens. Crypto enthusiast Richard Heart opined:

> **"Nations want more control over their cirizens. Nothing new...or good."**

And some even suggested that the confrontation between China and the U.S. in the cryptocurrency field could lead to a world war.

Place your bets

In regard to China, such an initiative has been discussed since January of 2016, when representatives of the PBoC announced the plans outlining their desire to create the country's own digital currency as soon as possible. At the same time, the Chinese central bank also clearly articulated the advantages of cryptocurrencies over traditional money:

> **"Digital currencies are much cheaper in circulation than traditional fiat money, promote trade, increase transaction transparency and reduce the risks of money laundering and tax evasion. The use of digital currency will help build a new financial infrastructure, strengthen the payment system in China, increase the efficiency of mutual settlements and accelerate the modernization of the economy."**

Notably, the PBoC has been following the development of the digital currency market for a long time, with an appropriate research group created back in

2014. And since 2015, the Chinese government has been actively studying the regulatory experience of other countries in order to prepare an appropriate regulatory framework.

Evolution of PBoC's relations with cryptocurrencies

It is noteworthy that in a report published on the PBoC's official website, the word "Bitcoin" is not mentioned even once, although China is one of the top players in the crypto industry. The principles and technologies on the basis of which it is planned to create a state digital currency are also not explained.

At the same time, blockchain technology is mentioned only once as one of the iconic phenomena in the information technology development. However, the general context of the statements suggests that the future digital currency will have much in common with Bitcoin — at least, from a technical point of view.

Wang noted that the PBoC was one of the first central banks to start exploring the possibility of creating its own digital currency, but research experience alone is not enough. Wang said, "We had an early start [...] but lots of work is needed to consolidate our lead." He also confirmed that the central bank has already received approval from Chinese authorities to create its own digital currency, though it is not yet known at which stage its development is currently at. Huang Yiping, a Beijing University professor and the chairman of the research initiative, said that China is ahead of the U.S. in promoting digital finance. He continued:

> **"It remains unclear if Libra will succeed [...] but the concept won't disappear. But it has sent a warning to China that its lead [in digital finance] is not a sure thing."**

However, in an interview with Cointelegraph, one of the senior PBoC representatives — who wished to remain anonymous — said that the implementation of such a fundamental project may not do without risks, continuing:

> **"Digital currency is a sphere very important to look at in the future. The turbulence caused by the Chinese–American trade war and the negative implications of it will last for a long time. Under these circumstances, we will have to monitor the development of digital assets since it brings both risks and opportunities. I believe that China will create its digital currency one day."**

By Julia Magas

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CRYPTO CUSTODY: ADOPTION SHORTCUT OR BLOCKCHAIN PURISTS' NIGHTMARE?

The major digital asset services platform Coinbase has recently announced the long-anticipated completion of a deal that has been in progress since at least May: the acquisition of Xapo's institutional business. The move projects Coinbase Custody to the status of the world's largest institutional digital asset custodian, securing more than $7 billion on behalf of over 120 clients globally. According to some estimates, Coinbase could now be holding over 5% of all Bitcoin in circulation.

Xapo, founded by early crypto evangelist Wences Casares and reported to be stashing cryptocurrency in secure vaults hidden in the Swiss Alps, has stated that the decision was prompted by the need to focus on the firm's core retail exchange business.

The community response in the wake of the news revealed a complex amalgam of sentiments and considerations with regard to the emerging custody concentration dynamics — ranging from excitement for the upcoming onslaught of institutional investors to concern over monopolistic tendencies to excavation of prophecies from Bitcoin's early days.

The role of custody

Put simply, custody is a service of securely storing somebody else's assets in a way that ensures regulatory compliance and allows users to perform operations — such as on–demand retrieval, collection of dividends or collateralizing derivative instruments, to name a few. While keeping track of where and how their money and stocks reside is easy for most individuals, it is a task traditionally outsourced on an institutional scale. As crypto assets become a prominent part of the financial ecosystem, with institutional actors leveraging immense volumes of cryptocurrency, the question of how to go about storing and handling digital wealth at scale comes to the fore. However different from traditional financial instruments, blockchain–based assets still need to be secured in an organized manner to ensure a comparable level of compliance and protection. Alex Lam, co–founder and CEO of digital asset services platform RockX, observed to Cointelegraph that custodians in the crypto space do for institutional actors what hot and cold wallets do for retail investors:

> *"For large financial institutions and corporations who trade on a much larger scale than regular market participants, the security provided by trusted third parties bearing the burden of custodianship will give these legacy organizations the confidence and certainty they have come to expect in more traditional markets."*

Legitimizing the asset class

In traditional finance, custody is seen as the layer responsible for security and stability of the system, as it ensures that the assets held are both safe and compliant with the existing regulatory frameworks. Many stakeholders of the digital asset domain expect institutional custody to do the same job in the still–volatile cryptocurrency markets, serving as a legitimizing force for the industry in the eyes of both regulators as well as capital–rich financial firms wary to invest in the space.

Charles Lu, CEO of Findora, a blockchain service for building decentralized financial applications, said in a statement to Cointelegraph that he sees maturing custodial services in the blockchain sector as lowering the barriers for institutional investors to enter the market, which is a welcome development:

> *"Institutional investors require built–in support for automated compliance, as well as security, privacy and transparency. To succeed, the crypto finance ecosystem needs to listen to the needs of the market. Until more regulated, secure, reputable custodians enter the market, widespread institutional investment in digital assets will remain low."*

Tom Maxon, head of CoolBitX's operations in the United States, emphasized the role that financial regulators play in shaping the custodians' business, telling Cointelegraph that:

> "Custodians tend to be large and reputable firms that are responsible for holding customers' assets or securities for safekeeping in order to minimize the risk of their theft or loss. As this role is mandated by regulators overseeing the operations of financial institutions, they are unlikely to abandon the use of a custodian to enter into the cryptocurrency realm."

Maxon added that the role that centralized exchanges currently perform in the crypto space is similar to that of institutional custodians, although such platforms are not particularly well–equipped for this position, saying, "It is widely–known that centralized exchanges are often hacked, making them unreliable and too risky for centralized crypto exchanges to be considered custodians by regulators."

Interestingly, while many commentators associate the emerging centralized crypto custody trend with the prospect of a more efficient and straightforward regulatory framework for the industry over time, some are worried about the current lack of oversight.

For one, entrepreneur and investor Roy Sebag pointed out in a tweet how Coinbase has amassed an enormous pool of value without having to go through standard auditing and financial reporting procedures, which would be unimaginable in the traditional finance.

Kevin Sekniqi, co–founder and chief protocol architect at AVA Labs, and Amani Moin, the company's chief protocol architect for cryptoeconomics, noted to Cointelegraph in a joint statement to Cointelegraph that there are certain scenarios that are likely to engender the increased likelihood of consolidated crypto custody:

> *"Concentration of custody in and of itself is not necessarily disastrous, but concentration of assets increases the impact of black swan events. Given the lack of clear regulations in the crypto space, this risk is heightened even more than in traditional finance."*

Diverging assessments

As there seems to be some degree of agreement among industry experts with regard to what is happening on the crypto custody front, opinions differ considerably about what the consolidation trend means for the industry. Generally, the valence of evaluations hinges on whether the speaker views the arrival of traditional financial institutions in the crypto space as a positive thing or otherwise.

Jill Carlson, the co–founder of Open Money Initiative, articulated the feelings of the angst–ridden part of the community, wondering if the trend toward consolidated crypto custody was a step in the direction of "recreating the same, broken financial system." Mike Poutre, managing partner at a blockchain–focused hedge fund Terraform Capital told Cointelegraph that he sees the Wall Street agenda behind the growth of crypto custody sector, saying:

> *"The big banks and brokerage firms want to introduce custodial relationships so they can produce more products to sell their existing customers. Their motivation is revenue based – pure and simple. Governments want to introduce custodial relationships so they can maintain their control over their citizens — pure and simple. Crypto purists should be very worried. Wall Street will most likely win this. Coinbase's recent acquisition shows the writing on the wall."*

Lars Seier Christensen, chairman of the blockchain network Concordium, is skeptical about the very idea of outsourcing the custodial function to a third party in the domain of crypto finance. According to Christensen's statement to Cointelegraph:

> *"It is a somewhat strange discussion as one of the main advantages with crypto is that you are your own custodian, per definition. Picking an external custodian is just introducing another point of failure and risk. This is only relevant for non–professional players in the industry — which may of course include some institutions that are not very serious about the space. In my view the role of being a custodian is vastly overestimated and there are far too many of those projects out there compared to potential clients."*

Institutional investment vs. ideological purity

Paradoxically, in order to get anywhere close to making the dream of an open, decentralized financial system come true, the crypto industry has to cooperate with the old guard that it aspires to eventually take down. Some experts who spoke to Cointelegraph on the matter saw the expansion of concentrated custody as a compromise between the crypto movement's foundational ideas and the need to funnel institutional money into the space for the sake of mainstream adoption. RockX's Lam said:

> *"Concerns that this marks a centralization of the cryptocurrency market are, to an extent, valid. However, if we are truly dedicated to bringing the cryptocurrency revolution mainstream, it is necessary to welcome institutional actors into the space."*

If the cryptocurrency industry is indeed hoping for institutional investors to join in, then the infrastructure has to be present. Maxon of CoolBitX commented regarding this:

> *"If we are aiming for cryptocurrency to become a viable alternative to the existing financial system, regulated custodian services will become necessary. With that, however, the industry could come to resemble aspects of the old order to which it was born to oppose."*

Other observers contend that adding a centralized layer on top of the crypto ecosystem's decentralized foundation is nothing criminal, as Hans Sundby, head of crypto for blockchain protocol Geeq, told Cointelegraph, "A custodian is just a third party that offers a regulatory compliant, secure and efficient way of handling large investments and holdings." CEO and founder of the Credits Blockchain platform Igor Chugunov told Cointelegraph that custody is something the crypto community will have to accept:

> *"It is not an attempt to copy someone, it is an attempt to cope with the issues that concern the audience of new investors, which the market of crypto needs. Moreover, we should take into account the strict security requirements demanded by regulators. Application of custody makes sense to me: the end justifies the means."*

Twitter user Oded Leiba noted that the emergence of crypto custodians is in line with the renowned computer scientist Hal Finney's 2010 prediction that "Bitcoin banks" would arrive at some point, creating an arrangement in which the original cryptocurrency is used for interbank transactions while consumers deal with the second–level, derivative digital asset system. Perhaps far–fetched 10 years ago, such a prophecy doesn't sound unfeasible today.

By Kirill Bryanov

CRYPTO, CASH AND DRUGS: CRYPTO USE GROWS AS DRUG TRADE DIGITALIZES

From speculation about its inherent value to theories about it being the payment method of choice for criminals, cryptocurrency is having a tough time keeping a clean name. One of the most common accusations is that cryptocurrencies perpetuate the sale of illicit drugs, a view recently expressed by United States Treasury Secretary Steven Mnuchin. Cointelegraph takes a look at the impact of cryptocurrency on illegal drug sales and whether it should shoulder more of the blame than cash.

U.S. GOVERNMENT CLAMPS DOWN

The watershed moment for the U.S. taking decisive action against illicit drugs being purchased with cryptocurrency happened in 2013, when FBI agents rushed into the San Francisco Public Library to arrest Ross Ulbricht, a man who played a central role in the digitalization of the international drug trade. Operating under the pseudonym "Dread Pirate Roberts," Ulbricht was the mastermind behind the Silk Road — an anonymous, Amazon–like marketplace located on the darknet — which let users buy and sell anything, regardless of legality. Although the site listed weapons, stolen credit card details as well as legal products, illicit drugs were by far the most common listing. The Silk Road pioneered the use of Tor, the network software used to access the darknet, and Bitcoin (BTC) escrow to conceal purchaser and seller identities and their activity. Although U.S. agents had hoped the seizure of the Silk Road would curb darknet activity, the news site DeepDotWeb wrote that the bust was "the best advertising the darknet markets could have hoped for," with a number of copycat sites popping up in subsequent years. In 2014, the FBI seized 27 darknet sites during Operation Onymous, a joint effort between the FBI and the European Union Intelligence Agency Europol to stamp out illicit markets. In 2019, darknet markets are still selling illicit drugs that can be purchased with cryptocurrency, but U.S. law enforcement continues to take a hardline approach, arresting a couple in California on Aug. 6 for selling drugs on the darknet in exchange for Bitcoin and Bitcoin Cash (BCH).

Recent events seem to confirm the firm policy of U.S. government officials. Less than two weeks ago, the Department of the Treasury added multiple crypto addresses to its Specially Designated Nationals, or SDN, list under the Foreign Narcotics Kingpin Designation Act.

The addresses are said to be associated with three Chinese citizens, all of whom are active Bitcoin users. One Litecoin (LTC) address was also included in the list.

The Kingpin Act serves to clamp down on transactions between international drug traffickers seeking to smuggle drugs into the U.S. and ban transactions between those traffickers and U.S. entities. The act also gives the government the ability to coordinate and investigate foreign traffickers, the names of whom are brought to the attention of the president, who ultimately decides whether or not to impose sanctions.

Such legislative measures have been established in response to the state of illicit drug consumption in the U.S.: The country is currently in the throes of a serious opioid epidemic, with a person in America dying every 16 minutes from an opioid overdose. The White House issued two advisories outlining its concern that fentanyl, along with other synthetic opioids, are being purchased using cryptocurrencies.

Intended to help financial institutions and digital payment platforms, the advisories named the cryptocurrencies most requested by sellers of illegal drugs:

> *"Individuals located in the United States search for fentanyl and identify potential websites that may provide the opportunity to purchase illicit drugs online. Foreign representatives will instruct the U.S.–based individual to send payments through CVC, such as Bitcoin, Bitcoin Cash, Ethereum, or Monero."*

In an act to clamp down on the online drug trade, the advisories urged financial institutions to come forward with any suspicious user data, including:

> *"Virtual currency wallet addresses, account information, transaction details (including [...] hash), relevant transaction history, available login information (including IP addresses), information obtained from analysis of the customer's public online profile and communications, mobile device information."*

WHERE ARE DRUGS BOUGHT WITH CRYPTO?

According to Ciphertrace's report on Anti–Money Laundering, or AML, almost all drugs sold on darknet marketplaces are purchased with cryptocurrencies. For the most part, "drug sales on the dark web" is a phrase that has become synonymous with "drugs purchased with cryptocurrencies." The dark web is a part of the internet that is accessible via specialized network software that allows users to navigate anonymously while their activity is largely untraceable. Given the increased surveillance powers of governments — most notably in the U.S. following 9/11 — the dark web provides an environment that is attractive, lucrative and, for the most part, safe for illegal drug traffickers.

Professor Talis Putnins, co–author of an influential University of Technology Sydney report on cryptocurrency and illegal drugs, told Cointelegraph that cryptocurrencies have had a big impact on the way drugs are purchased:

> *"Cryptocurrencies have fundamentally transformed the way illegal drugs are bought and sold, shifting much of the activity from a cash–based, physical 'on the street' market to an online marketplace.The online illegal drugs trade needed two fundamental things to take off. One is an anonymous communications platform, which was provided by the darknet and underpinned by TOR (an anonymous communications protocol). And the second important piece was an anonymous or private way of making digital payments that was difficult to trace by authorities. That is the role that cryptocurrencies have played. Thus, they are an integral part of the online drugs trade."*

On the other hand, Europol spokesperson Jan Op Gen Oorth expressed the opinion that the transparent nature of cryptocurrency renders transactions easier to trace compared to those involving cash:

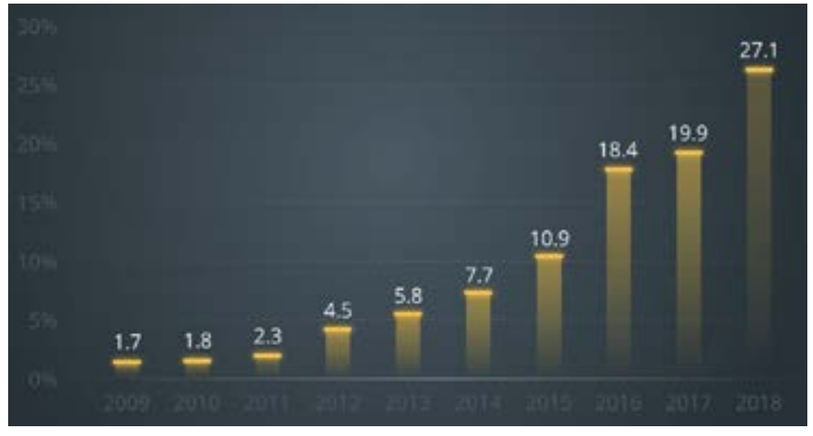
> "Payment for drugs using cryptocurrencies naturally makes more sense when compared to, for example, bank transfers. On the other hand, most cryptocurrency transactions are far better traceable due to their inherently transparent nature than cash."

HOW WIDESPREAD IS CRYPTOCURRENCY IN ILLEGAL DRUG SALES?

By virtue of their unaccountable nature, it is hard to estimate the exact market share of cryptocurrencies in illicit trade. The University of Technology Sydney report estimates that around 46% of illegal activity per year is associated with Bitcoin. While it is fair to note that this figure does not represent illegal drug sales alone, the report found that Bitcoin is the most commonly used cryptocurrency for purchasing drugs on the darknet. Putnins also noted to Cointelegraph that, although the use of Bitcoin for illegal purposes has increased, legal transactions using the cryptocurrency are also on the rise:

> *"What our research shows is that the dollar value of illegal activity in Bitcoin has continued to rise, as has the number of Bitcoin users involved in illegal activity, those growth rates have recently been outpaced by the strong growth in legal users, largely speculators. As a result, the percentages or shares of Bitcoin activity that is involved in illegal activity have fallen in recent years. Therefore, while the online black market has continued to grow, cryptocurrencies are increasingly being used for legitimate reasons."*

A joint report between Europol and the European Monitoring Centre for Drugs and Drug Addiction (EMCDDA) found that when compared with the annual retail value of the EU drug market, darknet sales volumes are still modest but have potential to grow. The 2019 Global Drugs Survey notes an all–time high of 27.1% of surveyed drug users obtained illegal substances for the first time via the darknet in the last 12 months, up from 19.9% the previous year, which highlights the trend of the increasing digitalization of drug trade.



The market share of online drug trade is growing

The report states that over the last six years, there has been a year–on–year increase in the percentage of surveyed participants obtaining drugs on the darknet. In addition, 30% of respondents claimed that the range of drugs they use has increased, and a further 5% reported that they had never tried drugs before accessing them via the darknet. The increase in both darknet sales and wider drug usage among respondents indicates that the digitalization of the drug trade is making narcotics more accessible — thanks to anonymous buying and selling as well as untraceable payments using cryptocurrency.

Moreover, according to the Global Drugs Survey, the ready availability of drugs on the darknet that are purchasable using cryptocurrency has increased their use and made them more attractive to those considering first time use:

"Over one quarter of participants reporting darknet market use in the last 12 months began their use in the year 2018: that is, they were new recruits to the darknet. These data confirm that darknet markets continue to attract new participants and that they are an increasingly significant players in the sale of distribution of illicit and prescription medication."

HOW DOES CRYPTOCURRENCY COMPARE TO OTHER PAYMENT METHODS FOR DRUGS?

Prior to the advent of cryptocurrencies, cash was largely considered to be the most anonymous means of carrying out illicit transactions, owing to the fact that it is largely untraceable. However, even as Bitcoin's popularity grows, cash still seems to retain its central role in facilitating criminal gains.

In its report, Europol notes that this happens for several reasons. The first of which is that cash is a tried–and–tested payment method that has been used for centuries. Consequently, well–established methods for laundering cash exist. Another advantage that cash has over its digital counterparts is the fact that it is equally as untraceable (with the exception of serial numbers) and anonymous while being easier to exchange.

Most — but not all — cryptocurrency exchanges and online wallet providers require at least some basic Know Your Customer, or KYC, procedures in order to confirm the identities of their customers. The Europol report states that exchanges are usually very cooperative when it comes to identifying bad actors. Cash, on the other hand, can be physically exchanged between strangers and laundered in any number of ways without information about those involved being made public.

A Ciphertrace report found that, while there is a variety of cryptocurrencies used on so–called dark markets, Bitcoin remains the coin of choice in 76% of transactions. This is perhaps unsurprising, considering Bitcoin is — by a considerable stretch — the most well–known and widely accepted cryptocurrency: Litecoin is reported as being used in only 7% of cases, while privacy coins such as Monero (XMR) are only cited as being used in 4% of transactions, contrary to popular belief.

The most popular cryptocurrencies on the darknet

HOW HAVE CRYPTOCURRENCIES CHANGED THE PURCHASE OF ILLEGAL DRUGS?

The most fundamental change that cryptocurrencies brought to the drug market is the ready availability of anonymous electronic payments. Beforehand, a drug trade would have to take place via traditional, offline networks where payments were made via a physical transfer of cash. This naturally restricts the accessibility of illegal drugs to established networks and exposes the entire supply chain and payment structure to a risk of interception by authorities. On the other hand, the anonymous digital payments made possible by cryptocurrencies are particularly attractive to drug dealers and play a role in creating an increasingly large and sophisticated network of dark marketplaces and "black e–commerce."

According to Tom Robinson, co–founder and chief scientist at blockchain analytics firm Elliptic, the benefits of anonymity for drug dealers can be limited by the ability to cash out their crypto profits:

> *"The challenge for drugs traffickers is how to cash–out the proceeds of their sales. Most cryptocurrency exchanges make use of cryptocurrency transaction monitoring tools such as Elliptic's, which use blockchain analysis to determine whether funds are coming from sources such as dark markets."*

Although Ciphertrace's report found that a very small share of darknet transactions involve privacy coins, Robinson believes that they are nonetheless an impediment to law enforcement's ability to help victims of cybercrime, compared to cases that involve other cryptocurrencies:

> *"One trend we are seeing is the increased acceptance of privacy coins such as Monero on dark markets where narcotics are available to purchase. Most new markets now accept Monero payments, typically alongside Bitcoin. This represents a threat to law enforcement's ability to trace this kind of activity and bring those involved to justice."*

Robinson explained to Cointelegraph via email that while Monero use is increasing, he is surprised that it has not disrupted the overall popularity of Bitcoin in illegal trade:

> *"First, what has become apparent and is slightly unexpected is that the emergence of privacy coins has not overly impacted the widespread use of the less anonymous Bitcoin in illegal trade. The privacy coins offer many advantages to criminals, but it seems the 'first mover advantage' of Bitcoin makes it difficult to replace now that its adoption in dark markets has become widespread. Put simply, it is not the best cryptocurrency to use for crime, but nevertheless remains the most popular."*

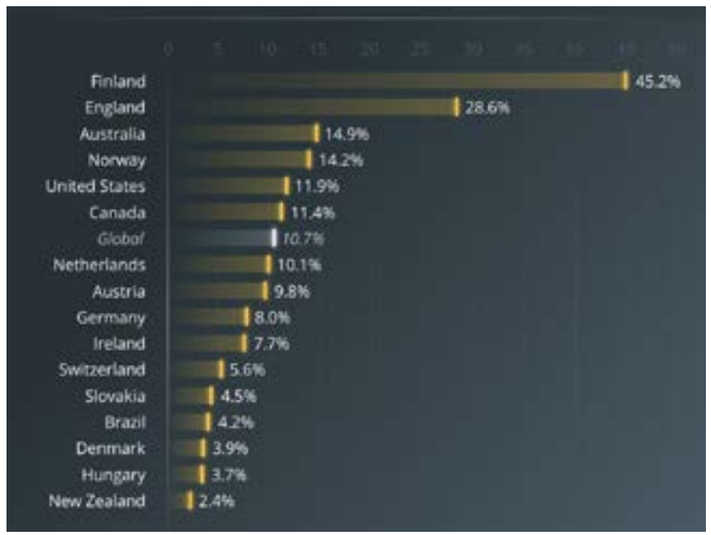
The demographics of darknet users

ARE CRYPTOCURRENCIES THE BEST PAYMENT OPTION FOR DRUG DEALERS?

Anonymity is a fundamental characteristic of cryptocurrencies that has been both celebrated and criticized in equal measure ever since their invention. Nevertheless, people buying and selling drugs with cryptocurrency aren't as untraceable as they might wish. The blockchain records publicly accessible details about every transaction made from one address to another. Unless the user launders the transaction through a series of intermediary accounts, both the origin and destination of the transaction can easily be discovered. The addresses can then be linked to public records, as was confirmed by Robinson:

> *"Cryptocurrencies are far less anonymous and less private than many people in the drug trade might hope. The analytical methods that we have developed for the Bitcoin blockchain allow a lot of the illegal activity to be identified and monitored. Continued raids and crackdowns by law enforcement agencies also speak to the ability of authorities to track at least some of the illegal activity in Bitcoin and other cryptocurrencies."*

Cryptocurrency is still a young technology with limited usage. Although it may make transactions more anonymous than conventional wire transfers, cashing out crypto that was previously used for illegal purposes remains a complicated and unsafe procedure. For these reasons, cryptocurrency is unlikely to fully replace cash as the currency of choice for illegal activity any time soon. While the view that cryptocurrency is just a payment system like any other may be more or less correct, its anonymity undeniably makes it more attractive to individuals looking to buy or sell illegal drugs. However, as technology advances and anonymous cryptocurrencies become more widely accepted, privacy coins have the potential to impact the structure and development of dark markets and the illicit drug trade in a significant way.



Countries where online drug trade is the most developed

By Henry Linver

SHARDING EXPLAINED

1. What is sharding?
2. What is sharding in terms of blockchain?
3. How does sharding work?
4. What problem will sharding potentially solve?
5. Are there any drawbacks to sharding??
6. Are there alternative solutions to sharding?
7. Who uses sharding?
8. What is the future of blockchain sharding?

What is sharding?

1

Sharding is a form of database partitioning, also known as horizontal partitioning.

The process involves breaking up a very large database into smaller, more manageable segments, with the idea of improving performance and reducing the query response time.

Sharding is not a new concept and has been around in traditional, centralized database management since at least the late 1990s. The term was actually popularized by one of the first massively multiplayer online role–playing games (MMORPG), Ultima Online, in which developers split players across different servers (different “worlds” in the game) to cope with the traffic.

In business, a common example of sharding a large database is to break up the customer database into geographic locations. Customers in the same geographic locations are grouped together and placed on unique servers.

What is sharding in terms of blockchain?

2

t is essentially the same process.

The blockchain network is the database with the nodes representing individual data servers. If we apply sharding to blockchain, this would mean breaking up the blockchain network into individual segments (or shards). Each shard would hold a unique set of smart contracts and account balances.

Nodes would then be assigned to individual shards to verify transactions and operations, instead of each being responsible for verifying every transaction on the entire network.

The idea is that, by breaking up the blockchain into more manageable segments, it should lead to increased throughput of transactions and therefore overcome the scalability issues faced by most of the major blockchains today. We’ll look at this in more detail a bit further down.

How does sharding work?

3

To explain sharding, let’s use the Ethereum blockchain as an example.

The Ethereum blockchain is made up of thousands of computers, aka nodes — currently 8,622, according to ethernodes.org — each lending a certain amount of hash power to the network. It is this hash power that allows the Ethereum Virtual Machine (EVM) to function — i.e., to execute smart contracts and run decentralized applications (DApps).

At the moment, Ethereum works on a sequential execution basis in which every single one of these nodes has to calculate every single operation and process every single transaction. A transaction passing through this verification process can, therefore, take a long time. Currently, Ethereum is hovering at around 10 transactions per second (TPS) — Visa, for comparison, does 24,000 TPS on average. Adding computers to the network will not necessarily improve efficiency, as the whole ledger is kept on every single computer and the chain of verification will just become longer.

With sharding, the idea is to move from a linear execution model, in which every node has to compute every operation, to a parallel execution model, in which nodes are assigned to process only certain computations. This will allow for multiple, parallel transaction processing at the same time.

The blockchain will be divided into separate shards (subdomains, or “buckets”). Nodes will only have to run the part of the ledger that they are assigned in order to execute processes and validate transactions, instead of maintaining the whole ledger all of the time.

EXPLAINED

What problem will sharding potentially solve? 4

Sharding is a potential solution to blockchain's ongoing scalability issues.

As mentioned above, one of the biggest problems facing blockchain networks is the issue of scalability. The more popular a blockchain network becomes, the more users are initiating transactions, decentralized applications and other processes on the network.

Increased transaction activity places increased demand on nodes to verify transactions, and there's a real threat that these blockchains could become clogged up (as seen on Ethereum during the CryptoKitties craze, when the game accounted for 11% of transactions on the network). If this happens, transaction speeds become painfully slow, which is not an ideal situation for long–term, sustainable blockchain adoption.

As explained above, if the blockchain is broken up into smaller segments, with teams of nodes assigned responsibility to individual segments, every node won't have to maintain the entire ledger to execute every operation. Transaction validation can, therefore, happen in parallel rather than in a linear fashion, increasing the speed of the entire network. It provides a solution to the scalability issues surrounding blockchain networks and therefore makes it more sustainable in the long term.

Are there any drawbacks to sharding? 5

Currently, the main challenges of sharding relate to communication and security.

If you split a blockchain into isolated segments, each shard will appear as a separate blockchain network. Users and applications of one subdomain will not be able to communicate with users and applications of another subdomain, without the implementation of a special, intershard communication mechanism. This adds an additional layer of complication for developers to think about.

In a segmented blockchain, security also becomes a concern, as it is easier for hackers to take over a single shard due to the reduced hash power required to control individual segments, also known as a single–shard takeover attack or a 1% attack. Once a segment has been hacked, the attackers can potentially submit invalid transactions to the main network, or it is possible for information in that specific segment to be invalidated and lost permanently. Ethereum's proposed answer to this security risk is random sampling, where shard notaries are randomly appointed to different sections to verify block authentication.

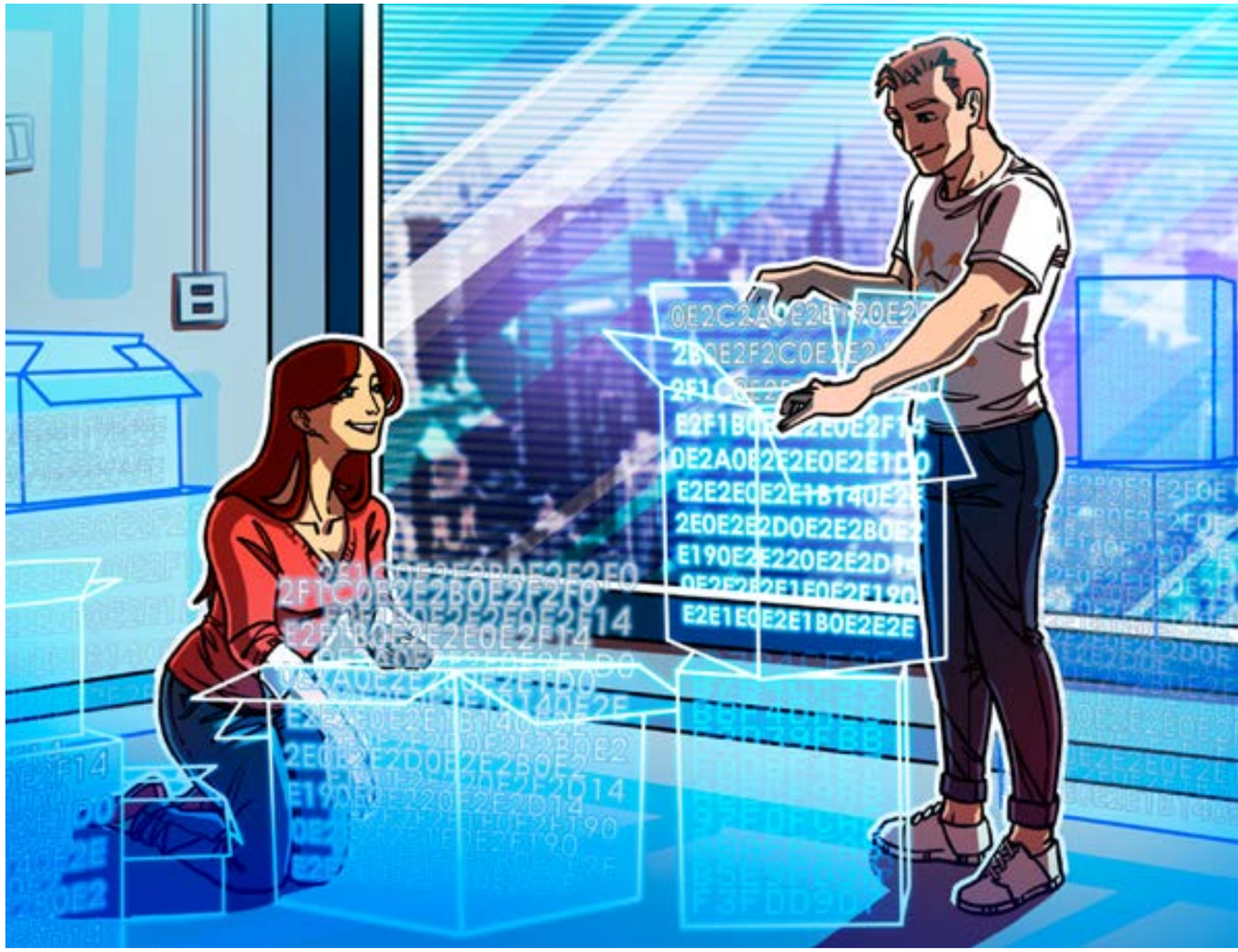
Are there alternative solutions to sharding? 6

Two additional proposals have been suggested by developers to improve performance and transaction speed on blockchains.

The first is to increase the block size, with the basic thinking being that the bigger the block size, the more transactions you can fit into a block — and therefore, the higher the number of transactions per second will be. Although this is true, it also means that the bigger the block size is, the more computing power is needed to verify the block.

If block sizes were to be increased indefinitely, only the most specialized, highly powered computer equipment would be able to handle the required processing power needed to act as a node. The increased cost of this type of equipment would mean node pools would necessarily become smaller and more centralized, increasing the risk of a 51% attack. Increasing the block size would also require a hard fork, which risks splitting the community. If not everyone upgrades to the new blockchain, two separate chains will exist, using two separate coins. Because of these issues, increasing the block size is only a short–term solution.

The second proposal is to use altcoins so that different functions and different applications would run on their own chain with their own coin. This would increase performance because you don't overload a single blockchain, but it will also increase security risks because all of the hashing power is now split over several blockchains. Again, this makes it much easier to hack the network, as the amount of hashing power needed to execute a successful 51% attack is much smaller. Therefore, it is not a viable solution.



Who uses sharding? 7

Some blockchains have already implemented a sharding mechanism, while in others, it is still under development.

Zilliqa is the first public blockchain platform to have implemented sharding. It was able to achieve 2,828 TPS in its testnet.

The blockchain ecosystem Near allows developers to easily build and deploy decentralized applications. It also call itself "a sharded, developer–friendly, proof–of–stake blockchain" and state that its sharding technology allows nodes to stay small enough to run on simple cloud–hosted instances — potentially even mobile devices in the future.

Similar to Near, Ethereum provides a blockchain ecosystem for the implementation of smart contract–based, DApps. The Ethereum Foundation is planning to introduce sharding as part of its Ethereum 2.0 update, set for launch in January 2020, as confirmed on an Ethereum Foundation call on June 13, 2019.

Other blockchain projects looking at sharding as a solution to scalability issues include Cardano, QuarkChain and PChain.

EXPLAINED

What is the future of blockchain sharding?

8

Sharding gained more attention recently because of Facebook's Libra coin.

Facebook recently released more details on the Libra coin in its white paper, which is planned for launch in the first half of 2020. It also emerged that Facebook acquired Chainspace, whose developer team was predominantly focused on blockchain sharding. This would suggest that the Libra blockchain will implement some form of blockchain partitioning. n a more general sense, though, sharding could be the solution that solves blockchain's trilemma.

In the blockchain trilemma, as described by Vitalik Buterin, co–founder of Ethereum, you can only ever maintain two out of the three blockchain core characteristics at the same time — namely, security, decentralization and scalability. That is because you will always have to compromise on at least one of these elements in order to have the other two.

As Beniamin Mincu — the CEO of the Elrond Network, a blockchain protocol focusing on scalability and interoperability — hinted at in a recent Forbes article, if the sharding challenges can be overcome, it will bring scalability to blockchains without compromising on decentralization or security. This, in turn, could bring blockchain one step closer to sustainable mainstream adoption. Mincu said:

"Sharding is complicated, but it provides the type of throughput capacity improvement that enables public blockchains to rival networks like VISA. Some of its challenges, though, include single–shard takeovers, cross–shard communication and data validity."

Chrisjan Pauw

BLOCKCHAIN ORACLES EXPLAINED

1. Why has there been such a spike in interest around AI and blockchain?
2. Are AI and blockchain compatible?
3. What problems could AI and blockchain solve?
4. What are the challenges of integrating AI and blockchain?
5. Are there existing use cases?
6. What is the future of AI for blockchain?

1 Why has there been such a spike in interest around AI and blockchain?

Artificial intelligence (AI) and blockchain are two of the most–talked–about technologies of the past 10 years, and their evolution has led to significant and promising innovations. The idea of combining them is particularly intriguing.

The profit potential for these two technologies is forecast to be in the billions for the foreseeable future. Gartner, a global technology research firm, estimates that the business value created by AI will near $3.9 trillion in 2022, while some anticipate the blockchain market will be worth roughly $23 billion by 2023.

The drivers behind this tremendous predicted growth are increased adoption, as well as the potential use cases that have been emerging across both sectors. AI, which is technically not a new technology, has taken on a prominent role in the tech world over the past two years. While we are still far from fully thinking machines, AI has been deployed in everything from marketing and sales to manufacturing and even health care. The technology has become a crucial part of most businesses' plans moving forward.

According to the consulting firm Mckinsey & Company, 47% of businesses surveyed have integrated AI into their operations in at least one capacity, and 78% plan to increase investments in the technology in the near future. Blockchain is on a similar track, with several industries adopting the technology as positive sentiments gain momentum. A PwC survey found that nearly 84% of respondents were actively involved with blockchain in some capacity.

2 Are AI and blockchain compatible?

The two technologies may have evolved separately, but they show impressive potential when combined and are already being integrated.

Considering the enormity of both trends across the tech world, it was only a matter of time until their trajectories merged. At their core, both technologies are centered around managing and communicating data, though they solve different parts of the puzzle. One of the byproducts of the digital revolution is that we generate massive troves of data from millions of touchpoints every day. AI is designed to quickly collect, analyze and correctly interpret the data, and react to it without any human interaction.

While it remains far from independent for now, AI can learn and continuously improve its operations as it collects and parses new data points. Companies like Netflix, Spotify, Google and even some health care organizations already use AI to tailor their services while providing better recommendations and improving results for consumers.

Blockchain, on the other hand, is more concerned with the storage and communication of data. Its distributed ledger architecture means that data is stored simultaneously across all nodes connected to the network, and it allows for data to be completely decentralized, making it quicker to access and more democratic. Since every node has access to all the available data, AI becomes less reliant on central storage for processing.

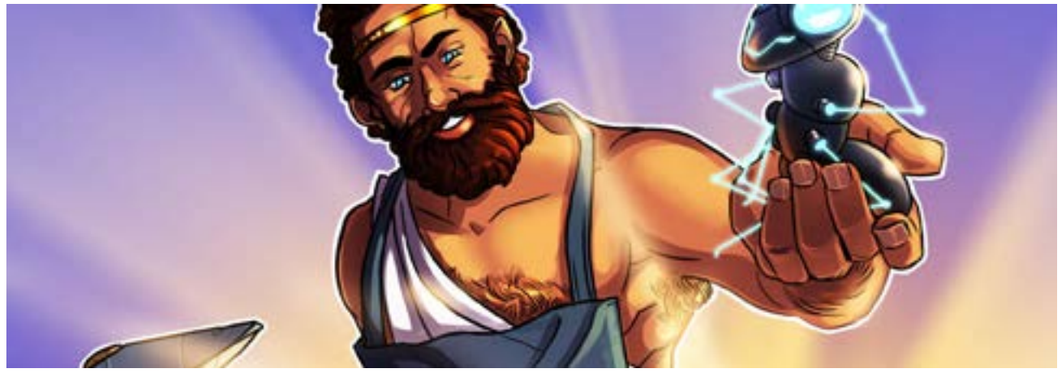
3 What problems could AI and blockchain solve?

As complementary technologies, AI and blockchain can deliver significant advantages across a variety of fields, which include analytics, health care, financial services and many more.

The two technologies have still mostly been kept separate, but initial attempts to combine them have seen interesting applications unfold. One of the earliest concepts of AI and blockchain integration revolves around data analysis. Much like centralized data sets, blockchain offers AI a massive base to collect and parse from to uncover better insights and solutions. Unlike off–chain storage, however, blockchain data remains secure and immutable — even in the case of storage failure. Blockchain consensus methods also mean that the data being used is more transparent and less prone to tampering.

Another key issue AI has is access to computing power. More powerful AI engines require more processing capacity, in contrast with hardware and cloud–based solutions that exhibit significant scaling issues. Using blockchain would mean that AI can access shared pools of computing power across networks, effectively scaling on demand. On the other hand, AI machine learning could significantly reduce the power consumption and requirements for mining coins.

Another intriguing application for AI and blockchain lies in the Internet of Things (IoT). As IoT devices become more commonplace, blockchain is an optimal technology to support the infrastructure, and AI could serve as an ideal manager of massive decentralized networks.



EXPLAINED

What are the challenges of integrating AI and blockchain? 4

Even with enormous shared potential, there are still some important challenges that AI and blockchain must resolve to become truly viable as a pair.

Despite blockchain's tremendous potential for data accessibility, privacy remains a large concern on public blockchains. While the goal is to democratize data, the presence of possibly sensitive data from IoT and other devices could raise some privacy issues for individuals and organizations alike. One solution would be to employ private blockchains that limits the availability of data to only those who own the chains.

Additionally, scalability remains an issue on major blockchains, which were not built to handle the massive demands expected of them currently. Ethereum, one of the most popular blockchains for development, can still only process roughly 15 transactions per second, and though other blockchains now claim to be processing thousands of transactions per second, for the most part, hard evidence supporting their claims remains absent.

Finally, smart contract technology presents a hurdle, especially for AI. Security issues remain a large challenge, and the deterministic nature of smart contract execution is a problem for AI engines, which usually require a more random approach to execution.

Are there existing use cases? 5

Even with these challenges ahead, several companies and organizations are already introducing AI into blockchain to produce results.

There are already several promising projects merging the technologies that span a variety of fields. Recently, blockchain–based Cortex has announced the launch of an AI–based network for decentralized applications (DApps), which can help optimize financial services. The company hopes to use the technology to generate credit reports for decentralized financial services, construct better anti–fraud systems, and even assist in gaming and esports.

Other companies, such as Endor, have taken a narrower approach. The organization, which offers a powerful AI–based predictive analytics tool, deploys blockchain to create a more scalable engine and access to more data. While the project is aimed at business users, it does significantly democratize predictive analytics technology.

For financial services, companies like Peculium (a savings management platform), AiX (a financial trading platform that offers trader–to–trader capabilities) and Autonio (a trading terminal that facilitates crypto trading) all deliver improvements over existing solutions and tools.

Finally, some projects are working to make AI integration simpler, such as Singularity Net, which offers a decentralized network for users to create and monetize AI services easily.

What is the future of AI for blockchain? 6

These applications are the tip of the iceberg. Potential use cases for AI and blockchain remain theoretical, but there are countless possibilities for the future.

Indeed, the pairing has garnered the attention of world governments seeking to become central hubs for innovation across the globe. Several countries have passed laws or launched initiatives to facilitate AI and blockchain development, catalyzing an innovation acceleration across the field. For instance, the United States has passed a law to facilitate AI–related investments while the United Arab Emirates has created a national program to provide scholarships for studies in the field. Even Malta has launched its own ambitious initiative to become a top destination for both fields.

One potential use of blockchain will be to verify AI processes, as machine learning makes these algorithms faster and more capable. Instead of having to rely on approximations of processes, blockchains can store step–by–step transactional data to verify any single operation and ensure the integrity of results. Other projects have explored the technologies' applications in health care, both for protecting users' sensitive health data and forming a more favorable marketplace for individuals to access medical services.

Chrisjan Pauw

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November, 2019
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