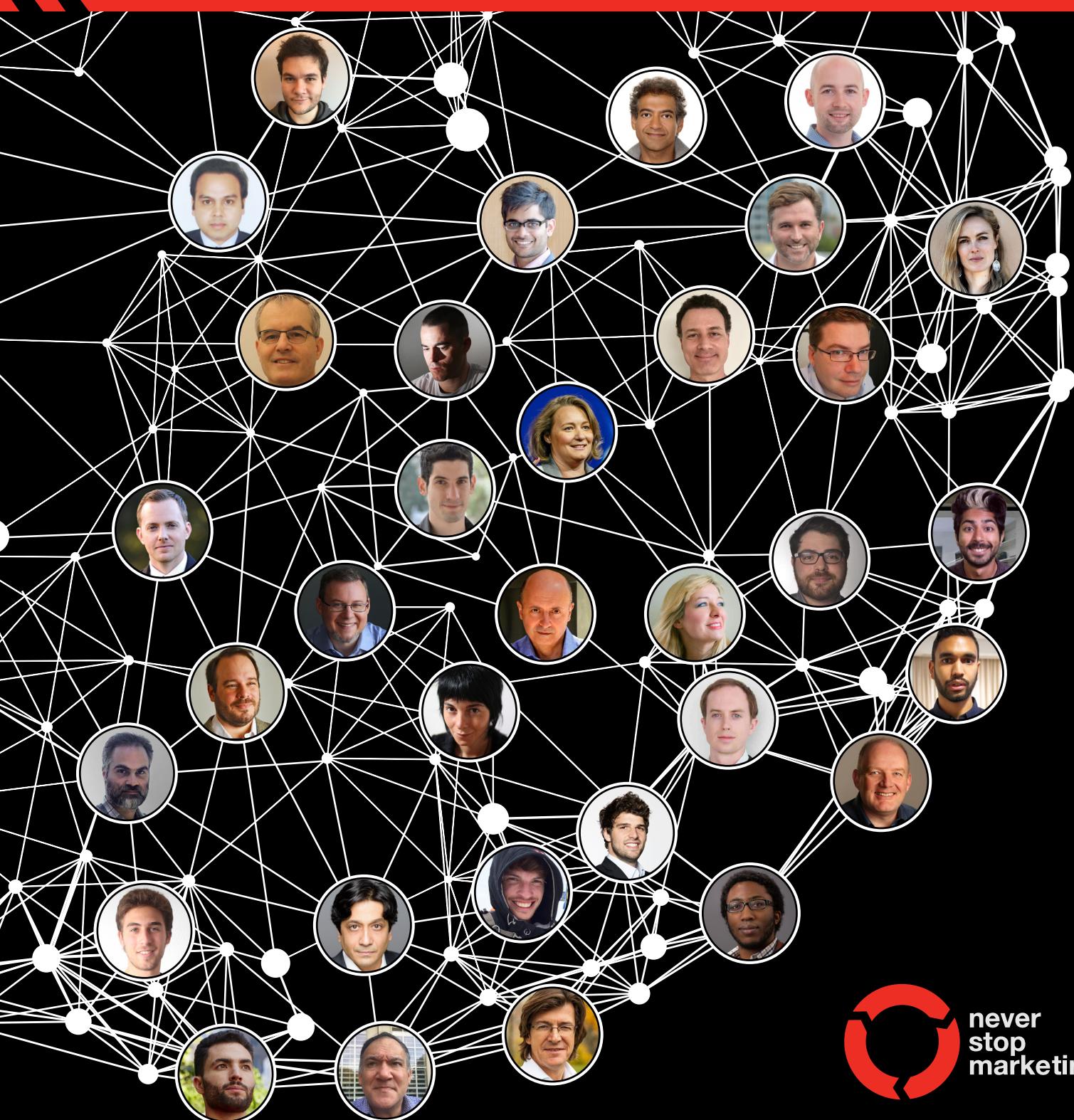
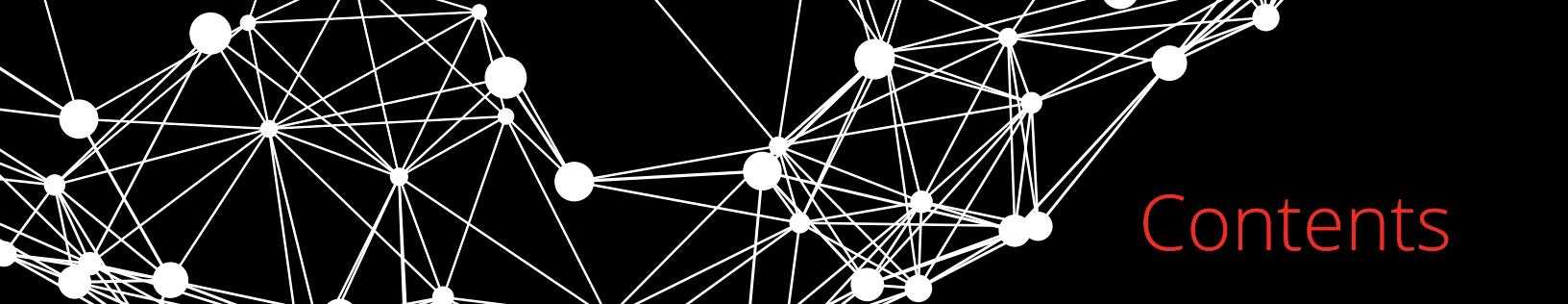


Blockchains in the Mainstream

When Will Everyone Else Know?

33 of the world's top entrepreneurs, investors, and thinkers discuss the marketing challenges and opportunities of the blockchain and decentralized future.





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When Will Everyone Else Know?

"Do you ever walk around feeling like you are onto a huge secret?" I asked Joel Monegro of Union Square Ventures as we walked the Highline in New York City.

"Exactly. It's like a massive wave of change is coming and most people just don't know it yet."

We were talking about the Age of Blockchains and Decentralized Systems.

You may feel the way Joel does.

Or you may just have a small sensation telling you that SOMETHING is happening...even if you can't exactly understand what it is yet.

Either way, "Blockchains in the Mainstream" is for you.

This eBook brings together 33 of the world's smartest entrepreneurs, investors, thought-leaders, and passionate believers. Many of the people who are at the epicenter of the transformation.

Each contributor has arrived at this point via a different route. Each fundamentally understands that the world can be more secure, more trusting, more cost-effective, and more inclusive.

What brings these contributors together here is a passionate desire to make the future a reality sooner.

We explore how those who share our beliefs can accelerate mainstream adoption and improve the lives of billions at the same time.

We offer ideas to help others, like you, who want to start a movement that is only made possible by blockchains and decentralized systems.

We highlight challenges and hurdles all of us will need to overcome.

This isn't an eBook about a technology.

It's a collaborative effort to help people live freer, more authentic lives with dignity and compassion.

Thank you for joining us in this mission.

Jeremy Epstein
CEO, Never Stop Marketing

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Erik Voorhees

ShapeShift.io | @ErikVoorhees

Erik Voorhees, CEO of leading digital asset exchange ShapeShift.io, is among the top-recognized serial Bitcoin advocates and entrepreneurs, understanding Bitcoin as one of the most important inventions ever created by humanity. Erik's former project, the groundbreaking gaming phenomenon SatoshiDICE, was, at its peak, responsible for more than half of all Bitcoin transactions on Earth and popularized the concept of "provable fairness." Having been a featured guest on Bloomberg, Fox Business, CNBC, BBC Radio, The Peter Schiff Show, and numerous Bitcoin and industry conferences, Erik humbly suggests that there is no such thing as a "free market" when the institution of money itself is centrally planned and controlled.

Bringing Radical Decentralization To The Masses

I fell down the Bitcoin rabbit hole in May of 2011, and have been stuck down here ever since. Those early days were rich with vision, with dreams, and with a naïve utopianism which we all recognized and cared little to avoid. We were the idealists, those who dove into the Bitcoin project long before its business utility was clear, before its financial power was apparent. It was not yet inevitable.

We focused on the big picture. Bitcoin taking over the world, dominating the global economy, displacing fiat, and bringing down central banks. I still think it will do this, and indeed the odds of a radical outcome for Bitcoin are more likely now (in 2016) than they were in 2011. Many others in the Bitcoin industry (or, "blockchain industry" as it's more politely called today) still hold this vision too, though they hide it. Read Machiavelli to learn why.

For these early adopters, the radical visionaries, there is no need to "sell" them on decentralization. They get it, that's why they got involved in the project. But for Bitcoin to keep growing into subsequently larger concentric circles of adoption, the idealistic promise just won't be sufficient. Why? Because the world, by definition, is not full of radicals.

No, Bitcoin and the revolutionary decentralization it enables needs to appeal to normal people... and they care not about fiat debasement or Jekyll Island.

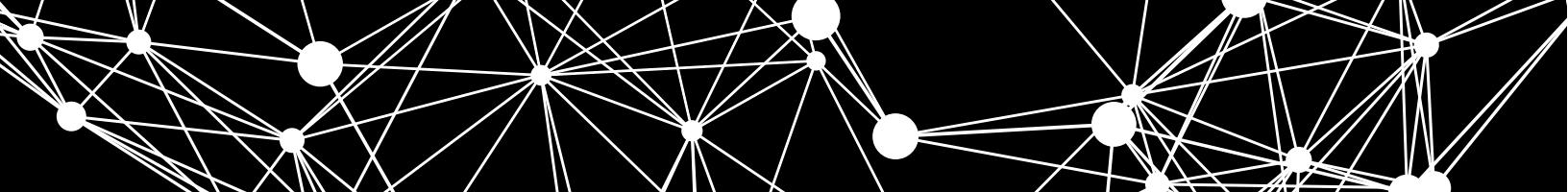
It's all about the apps.

Let's consider another technology that has disintermediated the world – the big one, the Internet itself. Over half the world's population uses the Internet regularly, and the rest will be there within a few years. As they've adopted the Internet, the power of the network has manifested itself, basically without the permission of anyone, and under the awareness of only a few.

"Few people care to disintermediate banks, despite their occasional superficial anger at ATM fees. They do care, however, to interact with each other, to create, to explore, in new ways."

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Bringing Radical Decentralization To The Masses (continued)

The Internet, like Bitcoin, brings radical decentralization to the world. Gatekeepers of the old days have been dismantled. The all-powerful ABCs, CBSs, NBCs, and cable news outlets are, today, more like a tragic joke, an embarrassing mirror into which the lowest common denominators of society still gaze while they eat dinner. They don't control news, any longer. The Internet disintermediated them. Consider too the record and publishing labels... all far weaker today. Anyone, of any age, anywhere in the world, can publish content and, with a little luck and a good dose of talent, find success. That's how it should be.

But while the world's inhabitants willingly brought the Internet, and its decentralizing power, into their lives, they didn't do it out of principle. Few downloaded Netscape Navigator in '96 because they "wanted to bring about a revolution in media distribution networks." No, they did it for the apps. They did it for the email, the online chat, the weather reports, the video games... and yes, the porn.

It was not the decentralization of the Internet itself that people wanted, but the apps built upon it. So too, it may be said, with Bitcoin. Few people care to disintermediate banks, despite their occasional superficial anger at ATM fees. They do care, however, to interact with each other, to create, to explore, in new ways.

*"...they care not about
fiat debasement or Jekyll
Island."*

Give them those ways, those apps, utilizing blockchain technology, and blockchain technology will take over the world. Show them something fun, something exciting, and the radical decentralization of Bitcoin will follow.



Naval is the CEO and co-founder of AngelList. He previously managed The Hit Forge, a seed investor in Twitter, Uber, Stack Overflow, Postmates, Optimizely, Thumbtack, Wish, and others. Naval previously co-founded Epinions (which went public as part of Shopping.com) and Vast.com. He is an active Angel investor, and have invested in dozens of companies, including Twitter, Uber, Yammer, Stack Overflow and Wanelo.

Naval Ravikant

Angel List | @naval

No Internet, No Cryptocurrencies...

Wait a minute... Make up your mind. This Snow Crash thing-- is it a virus, a drug, or a religion?

Juanita Shrugs. "What's the difference?"

-Snow Crash

Cryptocurrencies will create a fifth protocol layer powering the next generation of the Internet.

Humans don't **need** math-based cryptocurrencies when dealing with other humans. We walk slowly, talk slowly, and buy big things. Credit cards, cash, wires, checks – the world seems fine.

Machines, on the other hand, are far chattier and quicker to exchange information. The Four Layers of the **Internet Protocol Suite** are constantly communicating. The Link Layer puts packets on a wire. The Internet Layer routes them across networks. The Transport Layer persists communication across a given conversation. And the Application Layer delivers entire documents and applications.

This chatty, anonymous network treats resources as "too cheap to meter." It's a giant grid that transfers data but doesn't transfer value. DDoS attacks, email spam, and flooded VPNs result. Names and identities are controlled by overlords – ICANN, DNS Servers, Facebook, Twitter, and Certificate "Authorities."

Where's the protocol layer for exchanging value, not just data? Where's the distributed, anonymous, permissionless system for chatty machines to allocate their scarce

resources? Where is the "virtual money" to create this "virtual economy?"

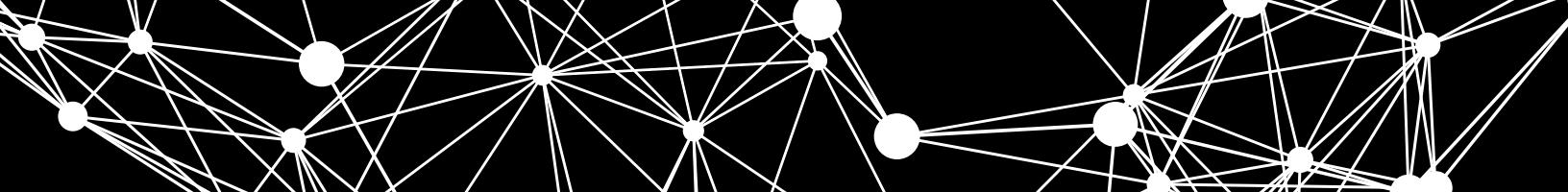
"Eventually, there will be no functioning Internet or Internet of Things at the protocol layer without deep cryptocurrency integration."

Cryptocurrencies like Bitcoin are already trustless – any machine can accept it from any other, securely. They are (nearly) free. They are global – no central bank required, and any machine can speak the language. And they're one to two steps from being **quick, anonymous**, and capable of **authentication**.

Suppose we had a QuickCoin, which cleared transactions nearly instantly, anonymously, and for infinitesimal mining fees. It could use the Bitcoin blockchain for security or for easy trading in and out. SMTP would demand QuickCoin to weed out spam. Routers would exchange QuickCoin to shut down DDoS attacks. Tor Gateways would demand Quickcoin

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No Internet, No Cryptocurrencies...(continued)

to anonymously route traffic. Machines would bypass centralized DNS and OAuth servers, using Coins to establish ownership.

Why stop at one Coin? Let's posit a dozen new Appcoins. Using **application-specific coins** rewards the open-source developers with a pre-mined quantity. A TorCoin can be paid to its developers and gateways and by Tor users, achieving consensus via proof-of-bandwidth. We can allocate any scarce network resource this way – i.e., BoxCoin for Storage, CacheCoin for Caching, etc.

Let's move on to other networks. Can a completely distributed grid of small generators trade power with each other, using a decentralized and trustless cryptocurrency? Can a traffic jam of self-driving cars clear itself as the computerized vehicles bid for right of way? Can a mass of people crossing a street take priority over a single car waiting at the traffic light, as their phones vote, trustlessly and reliably, for their presence? Can we efficiently route networks of assets like water and power, and liabilities like pollutants and sewage, across a distributed grid? Can we trade stocks and financial assets with no brokers, custodians, or agents?

Cryptocurrencies like electronic cash, and as such, will be used by electronic agents to exchange value, verify contracts, and track identity and reputation. All of a sudden, the computing resources spent by the Bitcoin miners doesn't seem wasted – it seems efficient, given that it can be used for congestion control and routing of other network resources

Cryptocurrencies are an emergent property of the Internet – almost a fifth protocol in the Internet suite. If Satoshi Nakomoto did not exist, it would still be necessary to invent them. Someday, they will be used by the machines in our network, on our desk, in our

garage, and in our pocket to exchange value and achieve consensus at blinding speeds, anonymously, and at minimal cost.

When that day arrives, large distributed networks that we rely upon will change. Starting with the Internet, they will become decentralized market economies, far more intelligent than they are today. Just as human brains co-evolved with our ability to trade and exchange goods with people who weren't related to us, so the network will become more intelligent as it learns to trade currency and contracts with unrelated nodes.

Eventually, there will be no functioning Internet or Internet of Things at the protocol layer without deep cryptocurrency integration. Turning off this fifth protocol will be impossible.

"Using application-specific coins rewards the open-source developers with a pre-mined quantity"

Cryptocurrencies also remain mediums of exchange and stores of value. Nation states that are used to imposing capital controls will face a quandary – ban cryptocurrencies, and live in the technology dustbin. Enable them, and this virus, this religion, this protocol – will enable the free flow of money and language, along with packets, around the globe.

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Jeff Garzik
Bloq | @jgarzik

Jeff Garzik is co-founder and CEO of Bloq, a blockchain enterprise software company. Jeff serves on the board of Coin Center and on the advisory boards of BitFury, BitPay, Chain.com, Netki and WayPaver Labs. He has delivered presentations on Bitcoin and blockchain technology at TEDx, State of Digital Money, Scaling Bitcoin, as well as private briefings to corporations, governments, central banks, and hedge funds. Jeff was also recently appointed to the World Economic Forum Expert Network as an expert in Information Technology.

Achieving Blockchain Mass Adoption

At Bloq, we feel that the improvement of people's lives and the empowerment of individuals begins with the accelerated mainstream adoption of blockchain technology. It's why we formed, to begin with.

Let's compare blockchain technology to another technology: the Internet. There was a lot of behind the scenes work being done in the middle-to-late 80's that made the Internet possible. But it wasn't until the browser was released that the Internet really began to gain speed. From there, it was "hockey stick" growth to where we are today, with billions of users connected and sharing data.

It's important to understand that new technologies can often take considerable time to develop and build momentum. Another similar example is the chip and pin approach to credit and debit cards. Europe has had this in place for the past 20 years, and despite the serious increase in security that chip and pin technology offers, only now is the United States broadly adopting it.

The blockchain is going to experience the same kind of growth as these technologies.

But to achieve that sort of growth, we need to focus on building trust. Bitcoin is a system that builds trust-- but like any new relationship, it can take a little while to develop confidence. Once the wider IT crowd recognizes the technology as innovative, we will begin to see more individuals participating in allowing the development of blockchain technology to move forward.

This is where Bloq comes in--while the early development community could work iteratively with the blockchain, the wider IT development community needs software that they can trust is secure and scalable. We've spent more than 6 years building an enterprise grade platform that makes it much easier for businesses to build and manage their own blockchain networks. With our solutions, corporations can build out their use cases without concern about whether there are exploits and with our experience working on open-source projects for many years—and in the Bitcoin space since the very early days—we believe that our expertise will make it much easier for the development community to participate.

This secure environment is important because, as corporations look to build new applications over the blockchain, research and development will continue moving forward. With each of these new applications, it takes us one step closer to achieving mass adoption.

"...the improvement of people's lives and the empowerment of individuals begins with the accelerated mainstream adoption ."

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Roger Ver

[Bitcoin.com](#) | @rogerkver

I'm currently involved in numerous Bitcoin related projects. Bitcoin is the most important invention in the history of the world since the internet. If you don't already know about it, google it.

The Promise Of Bitcoin To The Average User

Thanks to the invention of Bitcoin, for the first time in the entire history of humanity, anyone, anywhere on the planet can directly financially interact with anyone else without the permission of any bank, corporation or government.

This is a fundamental change in regard to the way in which the world is structured. It no longer matters where a person was born, in which country they reside, what color their skin is, whether they are young or old, rich or poor, employed or unable to work. Every single one of us now has access to the first truly global payment network, and it is about to unleash a tsunami of economic growth and creativity across the globe. This is truly the most important invention in the history of the world since the Internet itself, and I can't imagine anything more exciting to be contributing to.

The promise of Bitcoin and the 'blockchain' technology that underpins it, cannot be overstated. Without the need for a central bank or remittance service, individuals and organizations can transfer their wealth across borders without prior approval from banks and governments. They maintain full control of any funds they hold, secured through cryptography, and can rest safely in the knowledge that those funds cannot be misused by any intermediary.

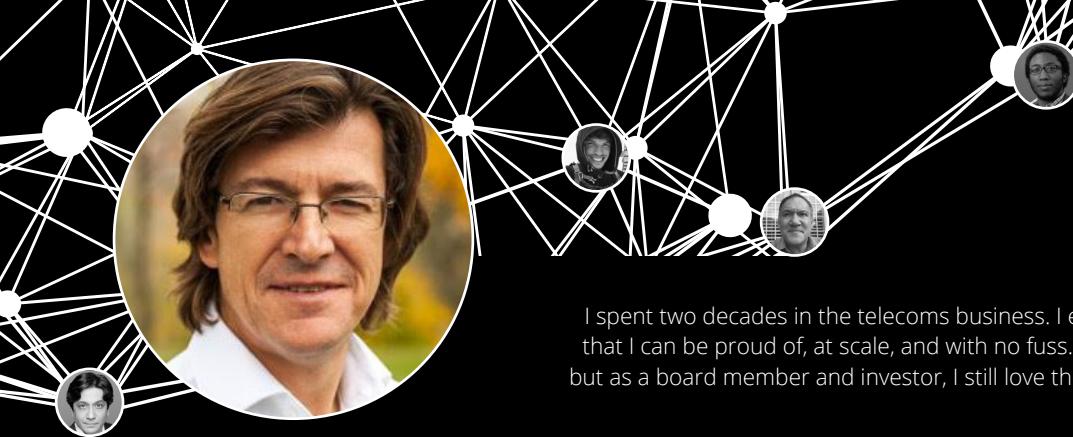
Global remittance is an often ignored sector which offers huge potential for Bitcoin to "cross the chasm" to mainstream adoption, as Bitcoin offers an alternative

to the world's unbanked population. There are an estimated two billion adults in the world today without a bank account, many of which rely on the traditional remittance services offered by national Post Offices, Western Union, MoneyGram and others. Bitcoin offers each and every one of those individuals the capacity to transact in a global economy, which has all but left them behind. With the average global cost of remittance sitting at an excessive 7.68%, the savings alone (never mind the convenience) of directing the remittance economy to Bitcoin could well be enough to encourage adoption once basic in-roads are made into this sector.

As an example, take a Bangladeshi expatriate working in the United States sending \$100 per month home to their family. The monthly minimum wage in Bangladesh is 5,300 BDT (\$67.50 USD). Out of a \$100 monthly money transfer, 7.68% represents almost 3.5 days worth of the minimum wage in Bangladesh, or the equivalent of 42 days of extra work per annum. To cut to the chase: if you could get an 42 days worth of extra pay straight into your pocket each year just by using Bitcoin, wouldn't you jump at the chance to do so? I think the rest of the world will, too.

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Michael Jackson

Mangrove Capital | @overdrev

I spent two decades in the telecoms business. I enjoy building and operating great products, that I can be proud of, at scale, and with no fuss. Now I'm no longer in day to day operations, but as a board member and investor, I still love the day to day issues that mark even the most successful business. Nothing is predictable.

Technology Must Become Popular, To Be Accepted

No internet technology has ever succeeded without quickly passing 100 million users. Bitcoin must do this to become relevant. Bitcoin remains complex, and requires educated users. Educated users read media. Yet media has no inherent monetization method. Bitcoin should deliver this. For millions and millions of daily users paying for the content they read, click by click.

The first 100 million.

This decade is defined by the growth of 'smartphones'. The massive computing power and ubiquitous communication is in the hands of consumers. A trend that we foresaw in 2003 on laptops, and has now reached the pockets of virtually everyone on the planet.

Now we need products.

There is no doubt that the true potential of Bitcoin based Blockchain lies in usage for irrefutable ledgers, where trust is inherent. Yet people fear technology. They fear it even more with their money. No one is putting their life savings into a Bitcoin wallet anytime soon. Financial inclusion for the underbanked sounds great, yet these people aren't underbanked because there are no banks. They're underbanked because they don't trust a bank, or can survive on cash and trading. They won't trust BTC either. One day, yes, we all want this, but this is the long game.

We must have some tactical initiatives. We need to make BTC useful for my friends on the bus every morning, or others reading well written articles by superstars or

commentators. And superstars and commentators want to be paid. They complain about the poor returns in media, and their dependency on writing for advertisers.

Isn't this the perfect storm? Ubiquitous wallets, agnostic of issuer, acceptable by all, an audit trail and no chance of losing money.

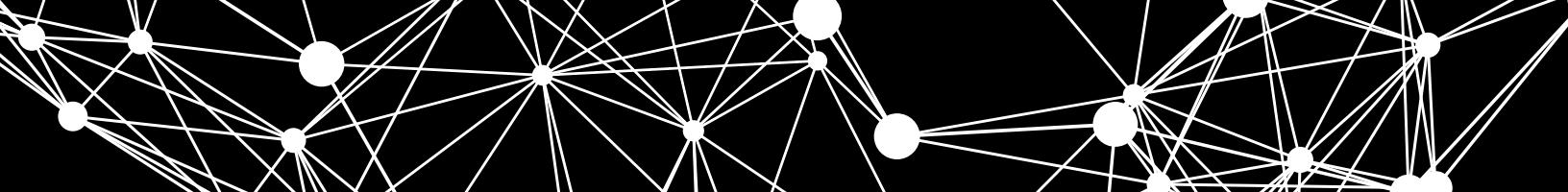
Click on the article, perhaps even this article, this book, through a 1mBTC paywall, that and it's done. A wallet funded with a few dollars in the beginning, dollars that can be exchanged back if not needed. A payment mechanism that is built for the internet, and agnostic to currency.

**"...the true potential of
Bitcoin based Blockchain
lies in usage ."**

At Skype, we weren't the first to enable IP telephony. We certainly weren't the first P2P network, we needed to find solutions to massive limitations. But the founders created a user experience that abstracted the technology from the user. It was easy. And it solved a problem Skype users don't know they are using IP communication. They don't know they are using a P2P network. They don't care. They are talking to their friends.

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Technology Must Become Popular, To Be Accepted (continued)

Bitcoin users don't need to know they are using BTC, nor that coins are mined or fungible or irrevocable. They want to be able to read content, and are happy to pay.

Publishers need paying. They just want to look in their wallet every morning and see that there is some money, just as writers can see in the ledger how much revenue their content has generated.

Just as the 'in-app purchase' released the games industry, the multi million prize will come to those who develop products that everyone can use, that are simple and relevant for the media industry and consumers.

There are issues with scalability of course - but the future of the Bitcoin project depends on small, low value transactions for hundreds of millions people.

"We need to make BTC useful for my friends on the bus every morning..."



William Mougayar

Virtual Capital Ventures | @wmougayar

William Mougayar is a Toronto-based investor, thought leader, blogger, and author of **The Business Blockchain** (Wiley, 2016). He is a direct participant in the crypto-technology market, and an advisor or board member to some of the world's leading blockchain organizations, including Ethereum, OpenBazaar, Coin Center and Bloq. He blogs regularly about the present and future of blockchains at Startup Management.

Marketing The Decentralized Paradigm

What stories and messages will help crossing the chasm to mainstream adoption?

Decentralization means that the story can tell itself via the peer-to-peer nature of its participants, both as end-users of an application, and by being a proxy to the computer nodes that power a given blockchain. Network effects are still critical, but they take a new form because the network is inherently decentralized with little to no central control. Therefore it grows in a truly distributed fashion, with less central governance and more network-based governance. We need to see more cases where central authorities are no longer a requirement for operating a business or service.

How will others get it more easily and quickly?

First, we need more users of blockchain applications, second we need more applications, and lastly, we need more developers. But the hierarchy of trickle-down benefits is actually in the reverse order: first more developers, then more blockchain applications, and finally more users. In the long term, many end-users may not know or realize there is a blockchain behind the actual software application they are interacting with, just as today we look for and value the capabilities of an application based on its own merits, not because it is a mobile app, nor that it runs on a database, nor that it is based on a given technology. There is a human element in the promise of the blockchain, because it is about all of us: society, culture, government, and business all together; including our new and old beliefs. Yet, that human element is still missing in my opinion, and we need to capture it.

"We need to see more cases where central authorities are no longer a requirement for operating a business or service."

What are the hurdles the industry must overcome on the way to mainstream adoption?

There is a fair amount of skepticism around cryptocurrencies, and the models they could engender, just because these new models enable wealth creation in unconventional ways, at least contrary to the traditional models. We must continue to make a distinction between blockchain applications that support existing models versus those that are creating new ones that didn't exist before. The later case is where most of the innovation will be expected to come from. But the bar is high on both sides, because the blockchain carries with it a lot of ambition. Blockchain theory makes a lot of sense, but history has proven that not all sound theories can find their place as successful and sustainable business models. The more we can bridge the theory-to-practice gaps with real cases, the more we will have lowered the hurdles to success.

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Jake Brukhman

CoinFund | @jbrukh

Jake is Co-Founder and Managing Partner at CoinFund, a blockchain technology research company and private crypto asset investment vehicle. Jake has 9 years of experience in pure and financial technology, a background in computer and mathematical sciences and an avid interest in blockchain and financial technology. Previously, Jake was Partner & CTO at Triton Research, a technical product manager and engineer at [Amazon.com](#), and spent five years as a financial technologist at Highbridge Capital Management and as a quantitative researcher at Kohera.

Community Ownership As A Blockchain Adoption Model

With the growth of B corporations, equity crowdfunding, and **technological competition**, we are beginning to accept that the industrial “operating system” upon which we build companies is a competitive differentiator. Blockchain-focused projects are taking this notion even further in the area of fundraising and community ownership.

Applications running on public blockchains have two core properties that set them apart from traditional products. The first is a kind of culture that not only elevates open source and open communities as veritable prerequisites for participation, but also natively exposes the key product metrics themselves—something seldom witnessed in the world of competitive private companies.

The second is a shift of ownership interests away from a few accredited high net worth private investors (typically VCs) and toward a large number of global community micro-shareholders (currently enthusiasts). While VCs have traditionally advocated laboriously for founders in generating traction and community around a product, decentralized ownership models have not only been creating impressive runways, but also attracting aligned and active user bases at the outset of projects.

Look no further than Steemit, to see one of the most simultaneously innovative and adopted public blockchains. Steem is the only blockchain that can boast

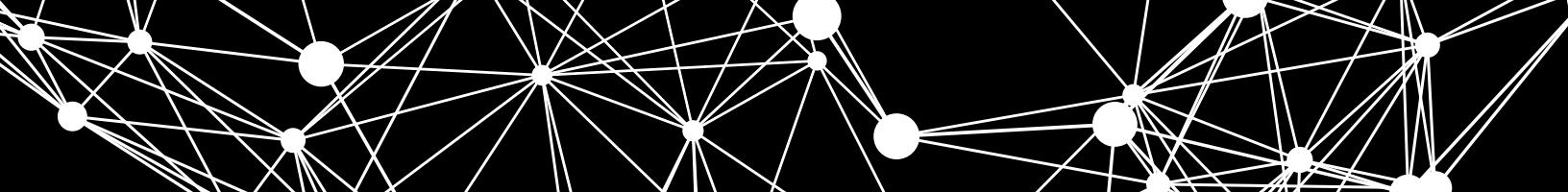
tens of thousands of mainstream user accounts as well as, non-trivially, a semblance of gender diversity. Whereas entire research industries are fixated on decoding the metrics and financials of opaque private firms, an analyst can to her heart's content read key product indicators right from the Steem blockchain: utilization, activity, retention, quality, and user acquisition costs, to name a few.

“Steem is the only blockchain that can boast tens of thousands of mainstream user accounts...”

Not only that, but to date Steemit (which sometimes describes itself as “an Internet small town”) has spent virtually no marketing capital. Instead, in June, community members authored a free 84-page Amazon e-book for newcomers entitled **Steemit 101**. In August, a community drive funded and erected a Steemit **billboard in Chicago**; then, another group erected one

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Community Ownership As A Blockchain Adoption Model (continued)

in **Manila**. **SteemFest**, the platform's first international conference, was self-organized by Steemit's bloggers (CEO Ned Scott will be in attendance, though he's coming as a guest). Incentivized by slowly vesting ownership in the platform, "Steemians" have taken it upon themselves to build an impressive **third party ecosystem** of alternative frontends, analytics tools, payment buttons, and quality control bots to aid the social media experience.

Community ownership is a powerful tool for adoption, and new models of building companies and products are increasingly important in the competitive high technology landscape. As we continue to observe the

evolving world of blockchain technologies, the power of incentives and transparency will continue to create compelling adoption stories. Will industry recognize these properties as core innovations and see beyond blockchain as merely an efficiency technology?

"Steemians have taken it upon themselves to build a third party ecosystem..."



Joel Monegro

Union Square Ventures | @jmonegro

Joel studied Computer Science and Economics before joining USV in 2014. Prior to his time in Venture Capital he co-founded three companies, ran a software development shop, and worked for the Government of the Dominican Republic as the Manager of the Digital Economy Department.

“Gateway Drugs” And Cryptocurrencies

I think a big breakthrough will happen when we figure out how to get cryptocurrencies in users’ hands for their application-layer interactions with blockchain services

The only way to earn Bitcoin and Ethereum “natively” as a participant of those networks is to mine those tokens, which quickly become unviable to the average user as the network scales. There is no way to “earn” the token for “using” its blockchain, which means the only way to get ahold of it is through trade, typically flat at an exchange like GDAX or Poloniex.

That’s not terrible, but it is a high bar. Onboarding users is difficult. By contrast, services like Steem have shown us that we can design blockchain services where end-users can earn tokens with immediate financial value for their user-level interactions with the service, in this case posting content to the network.

Becoming the “gateway drug” to cryptocurrencies is a big opportunity. But it will take a lot of experimentation to nail it and it may take us a while longer to get it right. We’re still in the infrastructure-building phase of blockchains. Which means that there is a lot of work to be done at every layer of the stack, and it’s still unclear whether Bitcoin and Ethereum will always be the dominant blockchains, or if they are today’s “Friendster” and “MySpace” to tomorrow’s “Facebook”. But when we do figure it out we’ll be a lot closer to mass consumer adoption and we will see a proliferation of consumer applications with clear incentives for users to participate.

A second key hurdle we’ll need to get past is the bubbling of tokens. We believe in the power token-based blockchain services and there are many great teams and companies out there building important technologies using this specific model. Some of these are in our portfolio, but there are also many scams and “pump and dump” schemes that are hampering the market. That’s normal — every new technology and economic model comes with its group of players who take advantage of the public’s enthusiasm for the new paradigm. It will eventually go away as more networks become successful services and the market learns to differentiate good from bad as best practices emerge. Although we’re getting closer, it’s still a hurdle we have to get through before any kind of mass consumer adoption and like most everything else, especially with the momentum behind blockchains, it’s only a matter of time.

“...we will see a proliferation of consumer applications with clear incentives for users to participate.”

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Arun Sundararajan

NYU | @digitalarun

Arun Sundararajan is Professor and the Robert L. and Dale Atkins Rosen Faculty Fellow at New York University's (NYU) Stern School of Business, and an affiliated faculty member at NYU's Center for Data Science and Center for Urban Science and Progress. His new book, **'The Sharing Economy,'** was published by the MIT Press in June 2016. Arun is a member of the World Economic Forum's Global Agenda Council on Technology, Values and Policy, and advisor to numerous other policy bodies, venture capital firms and cities.

Governance And Trust In Blockchain Markets

Many new forms of economic activity will be enabled by the blockchain because it has the ability to lower transaction costs. New decentralized systems, either independent or embedded within traditional privately owned corporations or markets, may also emerge in contexts where the blockchain lowers operating costs or where the replacement of outdated marketplace infrastructure was long overdue (this is already happening in financial services). They might also emerge in contexts where there was previously insufficient trust for digital exchange, and/or where the potential market was previously too small to attract private capital.

But the big question is, "Will the blockchain catalyze significant disintermediation in existing industries?" As I discuss in my book, "The Sharing Economy," this depends in part on whether the intermediaries do more than just clearing transactions, and in particular, whether these intermediaries provide valuable search, discovery or logistics capabilities that cannot be decentralized. But most critically, it depends on whether the "crowd is the market" model is trusted by a sufficient number of participants.

Creating this trust requires a framework for governance that situates blockchain markets appropriately within existing institutions, as well as providing transparency about how the code itself is governed. An approach that posits that the blockchain-based system is self-sufficient, comprehensive and embeds all of the past roles played by social, legal, and economic institutions into its code is doomed to fail.

Consider the example of "the DAO," the investment vehicle built on the Ethereum platform in the summer of 2016. A bug in the code allowed people to withdraw funds without lowering their balances. The controversy around how to rectify this vulnerability within a decentralized system (and whether to rectify it at all), culminating in the controversial "hard fork," highlighted the need for transparent processes that govern the code of systems like the DAO.

But more saliently, it reminded us that (much like intermediated investment systems) blockchain systems can never be completely "bug-free" with certainty either. Fraud, mismanagement, and a variety of other possible "bugs" put investors at risk even when dealing with traditional financial intermediaries, risks that are mitigated by regulations, courts and the rule of law. As the seminal work of 2016 Nobel Laureate Oliver Hart has taught us, contracts in practice are inherently incomplete, and can never cover every possible contingency.

If blockchain innovators want to make the transition from the fringes to the mainstream – if they imagine a world in which DAO-like systems are investment vehicles for not just your spare ether or Bitcoin, but for your kids' college fund – then a robust interface with existing institutions is critical, and should be actively embraced rather than being perceived as an ideological compromise.

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Ryan is a founder of Blockstack, a new decentralized internet and a platform for server-less applications where users own their data. Blockstack is funded by Union Square Ventures and Y Combinator. Ryan was inducted into the Forbes 30 Under 30 and graduated from Princeton University, where he studied Computer Science and Mechanical and Aerospace Engineering. He was also an engineer at ZocDoc, authored several popular open-source cryptography and blockchain libraries, and was the President of the Princeton Entrepreneurship Club, which was awarded the Alberto Santos-Dumont Prize for Innovation twice under his leadership.

How To Get People To Care About Decentralization

There's a growing community forming around decentralization. Every day, more and more citizens of the internet are realizing that something is very wrong with the way it has consolidated. They see how this level of centralization spills over into society, they see how it has dire consequences for our way of life, and they are coming to the conclusion that something needs to be done.

Some of these citizens are developers who are building decentralized applications in order to make decentralization a reality. Others are technology early adopters who see the promise of a decentralized future and spread the gospel.

Unfortunately, however, the cult of decentralization is still fairly niche. It's safe to say that mainstream consumers at large do not know exactly what decentralization means or why they should care.

The way that this can change, though, is for decentralization to be communicated more effectively and for people to see how it can meaningfully impact their lives.

It's important to recognize that decentralization is a property of a system that is not beneficial per se. Rather, it is the derivative properties of decentralization that are beneficial—properties like innovation, inclusion, independence, and information security (the 4 I's of decentralization). All of these properties have a meaningful impact on people's lives, and it is these

properties that should be focused on when spreading the gospel of decentralization to consumers. One must sell the benefits of decentralization just like one must sell the benefits of democracy or free trade.

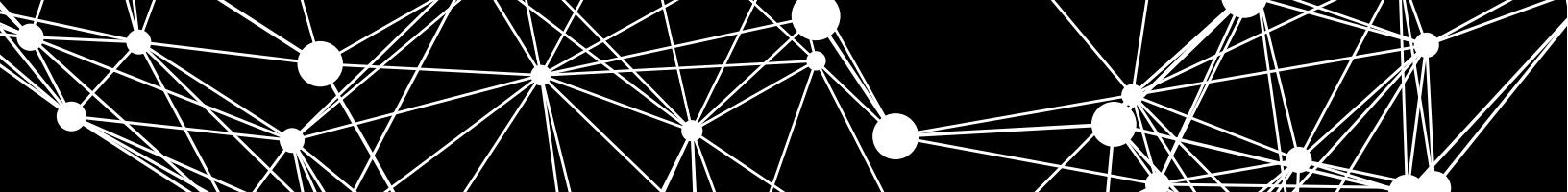
People care about innovation. They know that it means progress, it allows economies to grow, and it creates jobs for them and people they know.

"People care about innovation. They know that it means progress, it allows economies to grow, and it creates jobs for them and people they know."

People care about inclusion. When more people can participate in an economy and sell their goods and services to others, there's more economic equality, a stronger middle class, and a stronger economy.

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How To Get People To Care About Decentralization (continued)

People care about independence. It is a natural human desire to want to be free from the control of others. It means that they can do what they want, when they want, and it means that they can have a greater level of control over their destiny.

People care about information security. They constantly hear about data breaches in the news and about companies mismanaging their information. They worry about identity theft and about getting hacked and targeted. And they worry that in the future they may not be safe if something is not done soon.

Innovation, inclusion, independence, and information security—all four of these concepts are foundations for stories that can be told about why decentralization is important and why people should care.

As we focus more on the real impact that decentralization has on people's daily lives, we will see decentralization gaining more and more steam and reaching a wider audience.

That said, the story behind decentralization needs to have substance to back it up. We can sell people on the benefits of decentralization but they need to feel the benefits as well.

In order for decentralization to become a household name, just like democracy is today, people need to taste decentralization. They need to use decentralized applications on a daily basis and they need to recognize that they are so great because they are decentralized.

We need to remind people that the internet is so great because it is an open, global network that nobody controls. We need to remind people that email, perhaps the most widely used decentralized application, is so pervasive and so versatile simply because it is decentralized and interoperable and free. We need to show people the possibilities that await with decentralized applications like Bitcoin and OpenBazaar. We need to show people how all the applications they use could be rebuilt on platforms like Blockstack and could allow them to be fully in control of their data, their identities, their software, and their lives.

This is how we get people to care about decentralization and clear the way for the gospel of decentralization to reach the mainstream. Let's get started.

"We can sell people on the benefits of decentralization but they need to feel the benefits as well."



Juan Benet

InterPlanetary File System (IPFS) | @juanbenet

Juan Benet is the inventor of the InterPlanetary File System (IPFS), a new protocol to make the web faster, safer, and more open, and Filecoin, a cryptocurrency incentivized storage network.

The IPFS Project has grown into a large open source movement to re-decentralize the web, safeguard our data, and improve our applications. Juan is the founder of Protocol Labs, the internet tech R&D lab that develops IPFS and Filecoin. He studied Computer Science at Stanford University, and is obsessed with Knowledge, Science, and Technology.

The Decentralization Revolution

The following sections are excerpted from an upcoming whitepaper series entitled 'The Impact of the Decentralization Revolution.'

"The best way to sum up this revolution is:

DECENTRALIZATION, of services, of applications, of data, and of computation itself. This is achieved through new internet protocols, based on advances in cryptography, distributed systems, game theory, and economics. In particular, immutability, public verifiability, and trustlessness are principles the whole space strives for."

"I think Web 3.0 is turning centralized apps into decentralized protocols. Taking what bitcoin did to money, and doing it to all kinds of services and applications."

"The web does not work offline or in networks disconnected from the rest of the world. Suppose we were side by side working together on a shared document. The WiFi network connecting us is working perfectly fine, but some problem outside our room prevents us from reaching the web server out there. Almost all apps would fail then, and we could not work together any more, even though our computers are powerful and can talk to each other just fine."

"This gets particularly bad where internet access is intermittent, or very constrained. And that is most of the developing world. This is outrageous, actually. The internet is supposed to be a force for equalizing access to information and knowledge, and yet the people who need the internet most, are the ones least able to use it.

The irony is that their networks are often good enough to move the content to the region, but websites are too wasteful, or force constant connectivity to the central server."

"As I dug deeper into all these problems, I got frustrated and sad, and I realized: they're all caused by centralization in the Web, and specifically one pernicious thing: centralization in how we link to things."

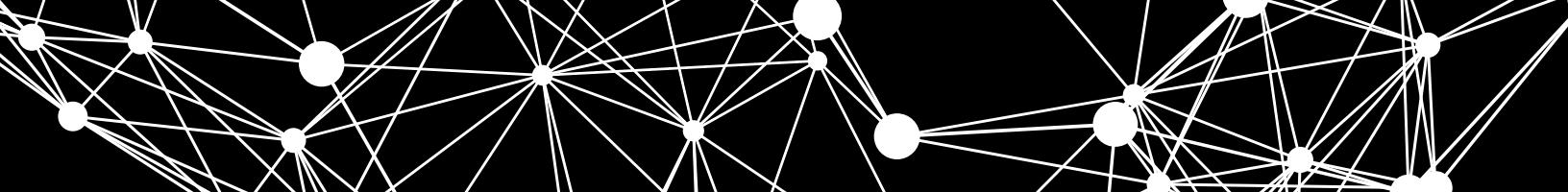
"It's useful to think about this in everyday human context. Imagine that we could only reference books by the physical location of a copy. Not by title, or author, or ISBN -- only the location of the physical object. So if someone told you to read a book, they'd say something like "Hey, you should read this great book, it's at the New York Public Library / section 9 / bookcase 3 / top shelf / first from the left". And now you have to check there, and get that one physical copy. Until you do, you don't know what book it actually is, you only have the location.

**"...Web 3.0 is turning
centralized apps into
decentralized protocols."**

This is obviously terribly inefficient. It gets worse -- what if someone moved the book? What if the library is closed that day? or totally shut down? Or, what if you get there,

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The Decentralization Revolution (continued)

you get to Bookcase 3, top shelf, first from the left, and you realize, this whole time, you had another copy of that same book in your backpack. This is madness."

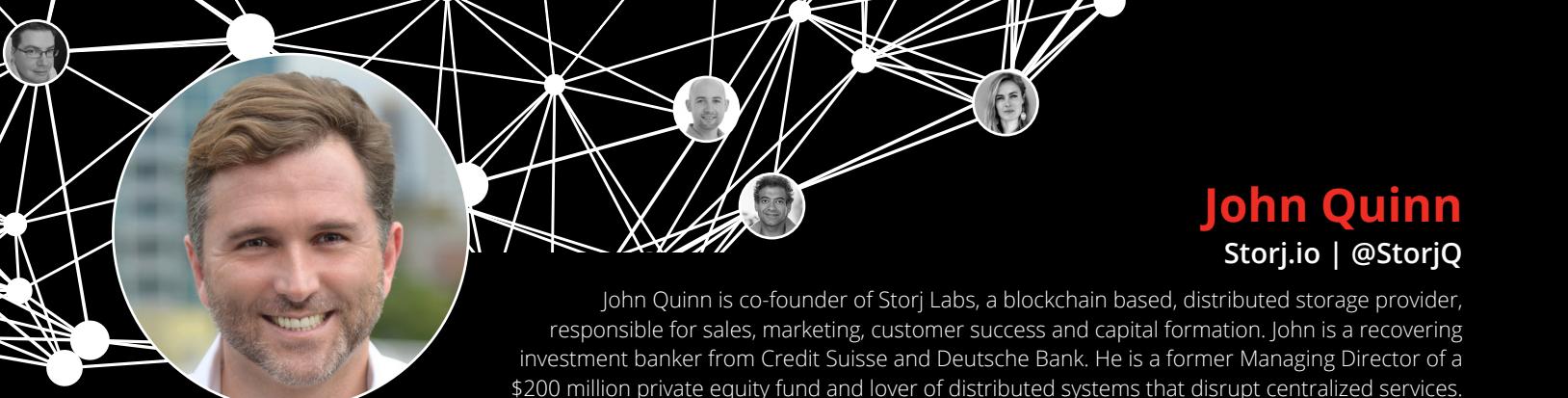
"IPFS decentralizes the web. IPFS addresses information by what it is, not where it is. It separates "what" from "where", so data can flow through the network, so it can be stored and served from anywhere by anyone. IPFS lets web applications work in local networks disconnected from the original source, whether it is a chat room in an office that lost its uplink, a scientific paper hosted in a variety of libraries, wikipedia in a remote village with poor connectivity, or a family's messenger during a crisis. IPFS strengthens our digital information, making it resilient to failures in the underlying internet, securing it cryptographically, and gives it permanence through time. You, archivists, and others that care, can save copies of information and count on the same links for years. Let's stop losing vital information by accident."

"IPFS is infrastructure for applications like this. But it will take more pieces before these products can replace their centralized counterparts. First, there is a need for a proper cloud computing environment -- this is being addressed by Ethereum, Filecoin, and others. Second, user authentication and identification in this new paradigm must be built -- uPort, Civic, and Onename are in-progress examples. Third, all of these systems must work well in mobile, web browsers, and every distribution platform regular consumers expect. Fourth, decentralized data sharing tooling and UX must be developed. All this work is underway now, and some pieces exist already, but it is far from done. All of these are prerequisites for something like a decentralized equivalent to Twitter."

"The next internet revolution is decentralizing services, computation, and data. It is making our networks more resilient, capable, and powerful. It involves blockchains, decentralized apps, cryptocurrency incentivized networks, and IPFS, the InterPlanetary File System. Location Addressing centralizes and makes the web brittle, insecure, and unusable in many circumstances. To overcome this, IPFS is upgrading the web to use Content Addressing, with cryptographic hashes. This will improve how digital information works, and make it more like printed information."

"The next internet revolution is decentralizing services, computation, and data. It is making our networks more resilient, capable, and powerful."





John Quinn

Storj.io | @StorjQ

John Quinn is co-founder of Storj Labs, a blockchain based, distributed storage provider, responsible for sales, marketing, customer success and capital formation. John is a recovering investment banker from Credit Suisse and Deutsche Bank. He is a former Managing Director of a \$200 million private equity fund and lover of distributed systems that disrupt centralized services.

What Would Wayne Gretzky Do? How To Increase Adoption Of Blockchain 2.0

"I call it the law of the instrument, and it may be formulated as follows: Give a small boy a hammer, and he will find that everything he encounters needs pounding." - Abraham Kaplan

Technology pundits often remark that Bitcoin/blockchain are technologies looking for a problem to solve. I must admit there is some merit in their pessimism. Often times the value proposition of "blockchaining", an existing vertical, does not match up well against the measuring stick of entrenched incumbents. Moreover, we see blockchain companies offering little in terms of new business models. Sadly, most blockchain companies use the blockchain as a new cog in old machines instead of designing disruptive tech which is extendable across industries.

For instance, the music industry ostensibly has a great use case for blockchain in the equitable distribution of content and royalties. A service which connects an artist's compensation directly to the consumption of their content would greatly reduce the friction felt in today's media distribution networks. The consumer would have access to a wider range of music and the artist would receive a greater share of the royalties/revenues. I think that everyone, except a small number of music industry participants, would love to support such a blockchain based service.

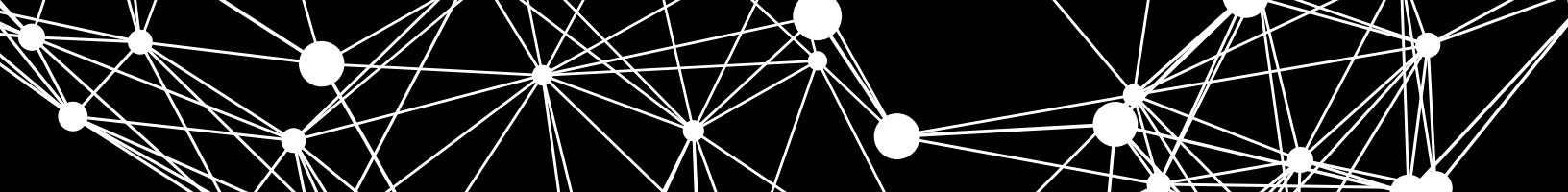
So why aren't we rocking out on the blockchain? Simply put, a blockchain-based music industry solution treats the symptom but not the disease. Music in 2016 is a marketing expense, not a valued commodity, the industry is controlled by an oligopoly, and these players are disinclined to modernize their business model. Hardly fertile ground for blockchain innovation. To compete with a global giant like Spotify, an emerging service would need more content, the blessing of rights holders, and possess a consumption model with greater appeal to consumers who have already been conditioned to enjoy the commodity for free. The blockchain is not a panacea for all that ails the world, especially in the case of the music industry. Some problems don't require a hammer.

A more compelling use case, in my view, are companies seeking to compete heads up with the entrenched incumbents, by using blockchain to offer features and enable business models that are impossible using the incumbents' technology.

For instance, here at Storj Labs, we thought about the type of object store that we would like to use as developers. It had similarities with Amazon's S3 service, but also leveraged the benefits of a P2P network. We knew that initially developers would focus on: performance, security, availability, and price point.

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What Would Wayne Gretzky Do? How To Increase Adoption Of Blockchain 2.0 Applications (continued)

For that reason, we set out to create a network protocol that delivers on all of them better than any incumbent. Have we checked all of these boxes? Frankly, no, we are 3 out of 4 and will launch our commercial service once we get performance up to commercial standards. That being said, we went into this business understanding that matching or exceeding the status quo is just table stakes.

The truly interesting part of our vision is after we establish Storj as a viable alternative to Amazon S3. We envision a world where developers use Storj as a data layer in applications which give control of data back to users. We see a world where an end-user shares his/her data in exchange for mutual benefit, not through coercion or lack of choice. The ultimate ownership and control of personal data will remain the individual's. Now think even bigger, what would happen if you connected these applications and shared data between them based solely upon the individual's explicit wishes? Specifically, imagine the power of a decentralized Facebook, Airbnb, or Uber, where the billions of dollars generated from user data goes back to those individuals, instead of the shareholders of these centralized services. That's what I consider a paradigm shift, and incumbent storage providers are ill equipped to help realize this reality.

As if completely disrupting the business model of the incumbent object storage providers wasn't a lofty enough goal, we are also actively working on putting ourselves out of jobs. Our ultimate goal is to create a trustless object storage network that is governed by algorithms, smart contracts and cryptocurrency that exchanges crypto-tokens (SJCX) for storage resources across internet connected devices. While some claim that we are building Skynet, we believe that we are enabling the true potential of IoT. **Take a look at Storj's (Secret) Master Plan to learn more.**

In the end, even if you're not on board with Skynet, it's undeniable that blockchain adoption depends on the strength of its applications today and the ability of these applications to form new use cases not possible with the incumbent's technology. Let us build blockchain platforms that compete head's up in today's arena and define the construct of future arenas.

To paraphrase hockey great, Wayne Gretzky, "A good hockey player plays where the puck is. A great hockey player plays where the puck is going to be."

"It's undeniable that blockchain adoption depends on the strength of its applications today and the ability of these applications to form new use cases not possible with the incumbent's technology."





Dor Konforty

Synereo | @Elokane

Dor is an expert on collaboration on the net and the wisdom of crowds. He has a master's degree in neurobiology from an interdisciplinary brain research program in Tel-Aviv University, working on neural networks. A graduate of the Israeli Air Force IT unit. Has been living and breathing crypto since early 2011. A child of the Internet.

Blockchain's Use Cases And Its Infinite Success

This isn't about messaging nor does adoption require that people "get it". Blockchain tech and the decentralized paradigm's entrance into mainstream use will come from just that - use. From use cases people appreciate.

Currently, Bitcoin has few uses for most. It doesn't hold any benefit for a normal person going about his daily life as long as they don't have to send money to their family across the border or buy drugs online. And while it's nice to hold money that's not under anyone's control, only few people *care* about this. And that's exactly the issue; there has to be a shift for blockchain tech from something you "care about" to something you simply use because it's better than the alternative.

What's going to make blockchain tech-based applications better than their alternatives?

I identify 3 key application archetypes ripe for disruption:

1. UGC platforms where users are the main sources of content - but centralized entities profit the most
2. Any "sharing economy"-type service exchange; Uber, TaskRabbit, eBay, and other types of marketplaces and market networks
3. Social communications that require tighter controls over data, identity, privacy and information flow

Even simple applications from the above categories ported to the decentralized paradigm will have a relatively easy time showing benefit to the average user; particularly in the first two, where it'll be felt in their pockets.

Another area where decentralization may shine but has not really been created yet: when we're all wearing bulky headsets or sophisticated contact lenses overlaying our senses with continually-updating Internet-based data. We're much more likely to notice the issues with having this information coming from centralized entities with extreme capitalistic agendas. It's one thing to get the occasional ad shown while browsing the net; it's another completely to have your AR device highlight or obscure certain business, locations or people based on someone else's monetary interests. Even the issues surrounding privacy and data-farming that most people completely disregard nowadays are going to start making headlines when involving each and every one of one's activities in every waking hour.

"We're much more likely to notice the issues with having this information coming from centralized entities with extreme capitalistic agendas."





Wayne Vaughan

Tierion | @WayneVaughan

Wayne Vaughan is the CEO of Tierion, a proof engine that uses the blockchain to prove the integrity of any data, file, or business process. Prior to Tierion, Wayne pioneered the development of marketing automation software. He is the co-author of Chainpoint, the first standard protocol for anchoring data to the blockchain. In 2004, Wayne was a member of the first team of amateurs to launch a rocket into space.

Blockchain Invisibility

Blockchain technology must become invisible to go mainstream.

I loosely define blockchain as systems that borrow technology and design pattern from Bitcoin. Key characteristics include no central point of control, high availability, strong data integrity, and network-wide consensus.

Incumbents won't drive innovation. Instead, they will use blockchain technology to entrench their market position. In some cases, incumbents will form consortiums and work to make regulation favorable to their members. R3CEV is a consortium of over 40 banks that aim to use blockchain technology to reimagine financial services. Soon you'll be hearing about consortiums in the insurance and healthcare industries.

Blockchain technology could quicken the growth of a global financial network. For example, Paypal could evolve to offer checking, loan, and investment services to a global audience. Or, Nasdaq could create a global market where accredited investors trade stock in private companies 24/7. Blockchain networks enabled by companies such as Chain could play a role in this transformation.

Smaller disruptors will provide new services or extend services to new markets. The global supply chain is highly fragmented. Startups such as Skuchain and Fluent are attempting to reorganize how global trade and trade finance works.

It's unlikely that customers will understand the blockchain technology used by businesses. Most of us don't know how Google works, but we use it every day.

Bitcoin will continue to be the killer application for blockchain technology for the foreseeable future. Bitcoin's ability to transfer and store value outside the traditional financial system gives people all over the world new opportunities to coordinate and conduct business. Like the Web, Bitcoin is an open network that will be used for good and nefarious purposes.

I believe we're in a blockchain hype cycle. Analysts and professional experts continue to pitch the blockchain as a panacea for the world's problems. There's little penalty for them to be wrong about predicting the future. Once the hype dies down and organizations start to deploy blockchain technology, it will impact millions of people around the world. Most of them will never know it's there.

"Most of us don't know how Google works, but we use it every day."

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Marco Streng

Genesis Mining | @Marco_Streng

Coming from mathematics, Marco Streng became involved with Bitcoin by studying emerging and self-organising networks. He has taken part in the community since its earliest days and has invested in several bitcoin and blockchain related startups so far. He is also co-founder and CEO of Genesis Mining, one of the largest Bitcoin mining companies as well the largest mining Company for Ethereum. Beginning of 2016 he founded the Logos Fund which is the first regulated Fund for Bitcoin and cryptocurrency mining in the world.

Understanding How Decentralization Can Change Lives

We have to work diligently to help people understand how decentralization can change our lives. In a world with unstable financial markets, and where privacy has become a scarce resource, decentralized systems offer a much-needed solution. Our struggle, however, is telling that story to the masses. Until now the industry approach has been to explain the technical workings of blockchain to demystify it for the public. This falls short of what is needed to drive real adoption. The time has come for our diverse communities to come together and tell the story of how blockchain can be an unbiased arbiter in an increasingly complex world.

The key to helping move beyond public fears about decentralization and making it more palatable for everyone is by creating intrigue, then excitement, and then closing the loop with trust. Most of the public will not engage will highly technical conversations around Blockchain because unless you are in the field, the technical aspects of it are not exciting.

A narrative approach, one that paints a picture of a more free and fair future is the best way to create intrigue in the mind of the public. Creating excitement around decentralization efforts also drives adoption, and it will be a vital aspect of any successful marketing strategy in this arena. Our team recently decided to send Bitcoin to space for the first time, to help demonstrate the accessibility of cryptocurrency,

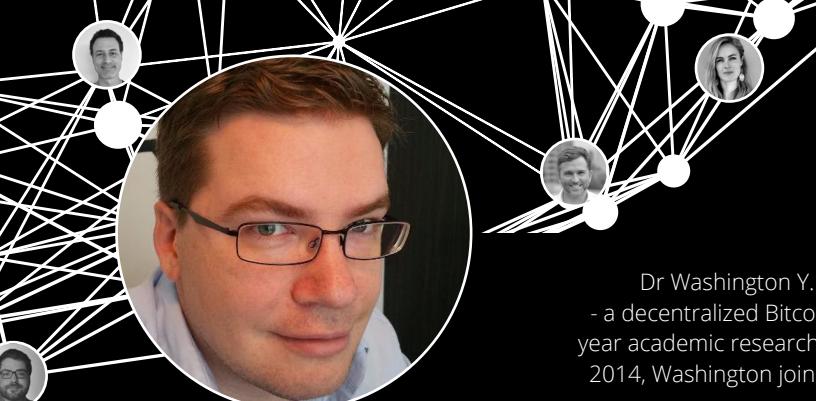
while creating excitement for its ease of use. The project was a success, and we were able to prove to the public that Bitcoin is a stable part of our technological and financial future.

The last area in which we must all rally our efforts is by creating a trust relationship with the public. Many view Bitcoin and its cryptocurrency relatives as vague and nebulous entities. The solution? Increase transparency and show the public where and how decentralized technology comes from. On numerous occasions, we have shown our customers our mining facilities with the intent of educating them about the physical realities of blockchain. As a community, we must continue to imagine creative new ways to show people that these burgeoning technologies are grounded in real science and secure practices.

If we can candidly address the public's concerns, while painting a picture for everyone of the potential that embedded in a decentralized future, then we will see greater adoption. Our dream is a fully realized, decentralized future, in which everyone can believe that systems are fair, and opportunity abounds.

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Washington Sanchez

OB1 | @drwasho

Dr Washington Y. Sanchez is the co-founder of OB1, a startup developing 'OpenBazaar' - a decentralized Bitcoin-based marketplace. Before co-founding OB1, Washington had a 10 year academic research career, focusing on cancer diagnostics and therapeutic treatment. In 2014, Washington joined the OpenBazaar project, contributing to the design of the contract system and trade protocol.

Crossing The Chasm Requires Product-Market Fit

The mere fact that our product or service is decentralized, or uses powerful cryptography, does not qualify it for inevitable success.

Decentralization is a feature, not a benefit unto itself.

With this mind, there are three truths or principles to keep in mind:

1. Users don't care about decentralization, nor should they.

Users care about products or services that entertain or empower them to get things done, nothing more. Similarly, users are typically agnostic to the ideological motivations that drive us to build the decentralized future.

If this is true, then our decentralized products and services need to compete on merit, not ideology, for the user's attention.

2. Your product or service still needs to be 10X better than the status quo.

Decentralization is a means to an end. If a product/service doesn't substantially improve the user-experience relative to incumbents, decentralized or not, it will most likely fail to gain traction. It needs to exceed the utility of incumbents to overcome switching costs such as familiarity and brand loyalty.

3. Solve the right problem.

As entrepreneurs, we need to be pathologically addicted to improving the lives of our users with the products/services we offer. Decentralized systems allow us to transcend legacy roadblocks and catalyze actions or behavior that benefit users.

If we find ourselves building a product/service with a decentralized technology, which mostly only solves a technical or intellectual challenge, but offers very little value to users, then we have strayed from our highest calling as an organization.

"Users care about products or services that entertain or empower them to get things done, nothing more."

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Yorke Rhodes

Microsoft | @yorkerhodes

Yorke E. Rhodes III is a passionate technologist, with a BS in Computer Science from NYU's Courant Institute of Mathematical Sciences. He has worked in industry for over 20 years, in software across large enterprises such as Microsoft and IBM as well as startups in wireless, mobile, digital marketing and e-commerce. Yorke is currently on his second tour at Microsoft working on partner and corporate strategy around blockchain and looking at various levers to help mature and accelerate this exciting nascent industry.

How Can A Decentralized Economy And Blockchain Become Mainstream?

First we need to ask ourselves: "What is mainstream adoption?" This can mean different things to different people depending on their context. For Microsoft, mainstream adoption means consumer and enterprise consumer adoption. This implies that product leverages the technology that is to be adopted. It does not imply that a user of the product needs to understand the fundamental paradigm shifting technology that made it happen.

Consider the Internet as we know it today. Does the common user know what TCP/IP is? No.

Yet a huge part of our economy in the form of ecommerce and mobile and social interactions rides on top of TCP/IP. These foundations represented the last major chasms to be crossed:

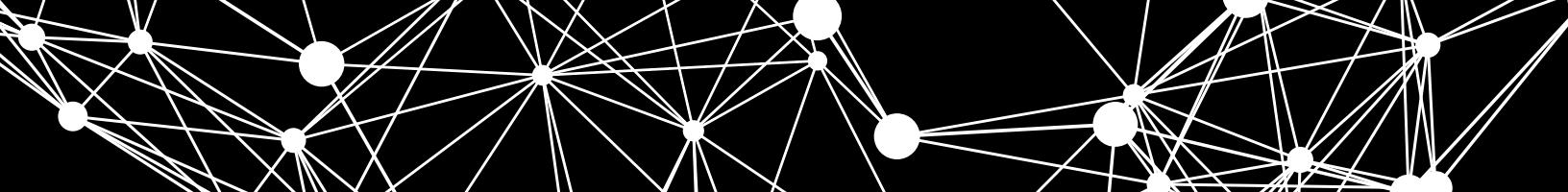
- TCP/IP (and browsers) brought us the Internet connected consumer
- Secure online transactions and the dominance (and trustworthiness) and service of products like Amazon.com and Alibaba brought us Ecommerce as we know it today.
- Mobile has overcome larger screen devices in terms of usage and internet connected transactions

These transformational foundations are what the next wave of chasms rest upon. Fundamentally, if you think about the last 20 years as the Internet, Mobile and

Ecommerce grew, then what is the next wave that will happen and will it be more quickly realized because of the previous foundation? My prediction is: Yes, because of the foundation above, the next wave will arrive much more quickly, and if we can catch it, allow society to hang ten for much longer.

"At Microsoft, you can imagine we have a keen desire to accelerate adoption. What we do with partners and how we look at our platform investments is largely focused on driving through this adoption curve."





How Can A Decentralized Economy And Blockchain Become Mainstream? (continued)

Enter decentralization and trust based systems we call blockchain. Blockchain and Bitcoin and decentralized systems represent a fundamental mind shift away from major assumptions we make in our daily developed world context.

You go to an enterprise or government to get trusted services:

- Hospital, Ambulance, Insurance, Police
- Bank Account, a loan
- Water, gas, electricity, governance
- Hotels, Airlines, Taxis

You use a centralized tool to get trusted services:

- TripAdvisor, Expedia, Priceline
- AmazonFresh, FreshDirect
- Nordstrom.com, Macy's.com

Even AirBnB and Uber are centralized and therefore presumably trusted and trustworthy services, through which you are comfortable transacting value. In the case of Uber, in fact, we encourage loved ones to hop into a car at a specified location with a stranger who can communicate with them via their cellphone. Wind back 10 years and the advice is: "Never get into a car with a stranger and let alone tell them where you live."

As consumers, we have been conditioned to the idea that centralized = trustworthy and have asked for centralized certifications to attest to that trust. Things like Certification Seals on websites and the USDA and others attest to the trustworthiness of a system or product. While certifications matter, more importantly service, reliability and ratings matter more. What allowed us to trust Amazon.com is that over time it established a reputation of providing secure transactions without fraud, good service, and a range of products that expanded from niche to main stream.

Let's look briefly at currency or value exchange. In the developed world, money and value are something that

consumers take for granted, but that are a privilege of working within an organization that is bound by the laws of the sovereign nation within which they reside. Depending on the stability of the government, economy, national production and other things, the currency of a nation and therefore a consumer's net value or ability to purchase can fluctuate. The National (or fiat) currency therefore has a completely different meaning in the consumer context of the United States, Venezuela, Cuba or Greece. If you look at currency on a global scale, the relative value has shifted dramatically over time, as well as inflation.

The fundamental market making action is trusted parties coming together to exchange goods, services and products based on an agreed upon value. Breaking this down further, when I purchase something in a local market, my reputation is established based on the merchant knowing who I am and seeing my transaction history over time. If you take this all the way to a barter based system, a buyer and seller in any geography make a trade in person and exchange based on agreed value of their products or services. This is fundamentally a peer to peer transaction with no third party. The phenomenon of blockchain allows this type of transaction to happen digitally among parties that never meet in person, at an agreed value of exchange securely.

Blockchain imbues in a system trust between counterparties that do not know each other. The characteristics of blockchain include a shared ledger, a way to arrive at the truth of that ledger that can also include complex business logic and governance.

Getting back to how we accelerate mainstream adoption, we should focus on modifying existing products. By modifying existing products, we are tapping into a deployed ecosystem allowing adoption to

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How Can A Decentralized Economy And Blockchain Become Mainstream? (continued)

happen through an upgrade cycle. Since an existing customer is far easier to upgrade than to acquire a new customer, this assures a speedy path to adoption of the new technology. Additionally, we don't have to educate the market on "blockchain" in order to get them to buy. Any sales cycle where market education is required leads to a long adoption curve. Taking this approach, we encourage existing product vendors to innovate and iterate their products to take advantage of a new technical discovery. As a product owner, you look for opportunities to do this as a normal course of business. In this case, we help the product owner understand and acquire the characteristics of blockchain for the next version of their product.

For that to happen, it means developers and business analysts using those products need to realize the value of the new characteristics of blockchain. You might look at this adoption cycle taking the necessary following steps:

- Tech is ideated, rolled out for public bashing – largely completed
- Tech is sound (verifiably) – enough have vetted the concept
- Developers kick tires and get trained – this is ongoing, but still early
- Enough tools emerge to make developers more efficient
- Platforms start to provide needed building blocks – this is just being conceptualized
- Developer ecosystem builds solutions – some existing developers have started augmenting products
- The tech finds its way into existing products and businesses already adopted based on the value proposition of the characteristics of the solution

At Microsoft, you can imagine we have a keen desire to accelerate adoption. What we do with partners and how we look at our platform investments is largely focused on driving through this adoption curve. In addition, we strategize internally on which of our products could find value in the characteristics of blockchain.

Effectively by leveraging our product or partner product as the vehicle, what we are doing is riding the shortest adoption curve to deployment of the exciting new technology. This drives the new technology and value proposition far and wide without having to educate every party. It isn't hard to draw parallels to this approach with other technologies, like stream databases, an innovation that emerged to solve the social media problem. No consumer or company had to be educated or sold to drive this adoption. It happened as a matter of course as social networks were scaled up.

"Thesis: riding on the prior 20 years of internet innovation, the next digital wave will arrive much more quickly, and if we can catch it, allow society to hang ten for much longer."

Primavera De Filippi is a permanent researcher at the CERSA / CNRS / Université Paris II. She is a faculty associate at the Berkman-Klein Center for Internet & Society at Harvard Law School, where she is investigating the concept of governance-by-design as it relates to distributed online architectures, such as Bitcoin, Ethereum, etc. Primavera is also the co-founder of Backfeed, a decentralized governance model for blockchain-based applications. In addition to her academic research, Primavera acts as a legal expert for Creative Commons in France and sits on the stakeholder board of the P2P Foundation.

Ridiculous, Dangerous, Or Self-Evident?

According to Arthur Schopenhauer, all groundbreaking ideas pass through three fundamental stages:

First, they are ridiculed. As new ideas are created, they often do not fit into the existing frameworks of society. As a result, they are often mocked and regarded as absurd or impossible.

Second, they are violently opposed. Once an idea acquires a certain degree of popular support, it might encounter resistance from those who see them as a threat. People are accustomed to familiar concepts, and are often reluctant to adapt to something new. Although many ideas will be recognized as viable, those with the potential to disrupt the status quo will be strongest contenders to find opposition, particularly by people in power.

Third, they are accepted as being self-evident. As more evidence is released to substantiate these particular ideas, they progressively enter the mainstream and eventually become accepted as a given.

If we were to look at how blockchain technology's perception has evolved throughout the years, it seems that it has now passed the ridicule stage. Although Bitcoin was initially perceived as a farce when it first came out in 2009, due to its unlikely attempt at replacing the established financial system, after 7 years of operations, it is no longer perceived that way. Bitcoin has not only proven to be a viable tool to transfer value around the globe in a secure and decentralized manner, it also inspired the emergence of many other

blockchain-based applications, introducing a new layer of trust in decentralized peer-to-peer networks.

Although blockchain technology is past the first stage in Schopenhauer's theory, it now has entered the second stage: opposition. The benefits of this technology, in terms of disintermediation and trust, also constitute a threat to many established institutions and incumbents that operate as intermediary middleman. This introduced the first wave of opposition by financial institutions and some governments. These institutions initially condemned the technology, labeling it as a "tool to support criminal activities" such as tax evasion, money laundering and terrorist financing.

Interestingly, although the backlash of the technology was strong, the same institutions that initially opposed blockchain technology are the same ones that eventually pushed it through the third phase. After the initial backlash, it soon became evident that financial institutions, companies and corporations, as well as a variety of public administrations could significantly benefit from the use of blockchain technology in order to increase the efficiency, transparency and accountability of their daily operations.

Although we are still at an early phase of experimentation, it is not unconceivable that, one day, blockchain technologies will be regarded as a "given", just like other communication technology of our everyday life.

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Leanne Kemp is the founder & CEO of Everledger - a digital, global ledger that tracks and protects diamonds and other valuable items on their lifetime journey. With a wealth of successful startup companies under her belt, Leanne is pushing boundaries in protecting the global market of diamonds and luxury goods. Everledger is leading the market in real world application of blockchain technology with a set of industry awards including the Meffy Award 2015 for Innovation in FinTech, BBVA Open Talent 2015, FinTech Finals 2016 for Best in Show, European Financial Tech Awards 2016 for Best blockchain Company, Asia Insurance Technology Awards 2016 for Best Newcomer and the Penrose Award for Innovator of the Year.

Education And Use Cases Are The Key

Blockchain has infinite possibilities. Every day industry is experimenting and uncovering new ways the technology can be applied. We hear about the potential to better protect our identities, process payments faster, track the provenance of goods or simply ensure the goods we trade are ethically sourced.

Whilst blockchain promotes the promise of a better future, it is however, a nascent technology. If we were comparing it to a human lifespan the technology would just now be taking its first steps. There is massive progress, but there is still a long way to go.

The biggest challenge any industry faces when adopting an emerging technology comes down to two things.

- First, is there enough education on how the technology works and a shared understanding among all the stakeholders involved?
- Second, are we able to identify genuine use cases, or more importantly problems, where the technology would offer a better solution than what is presently available.

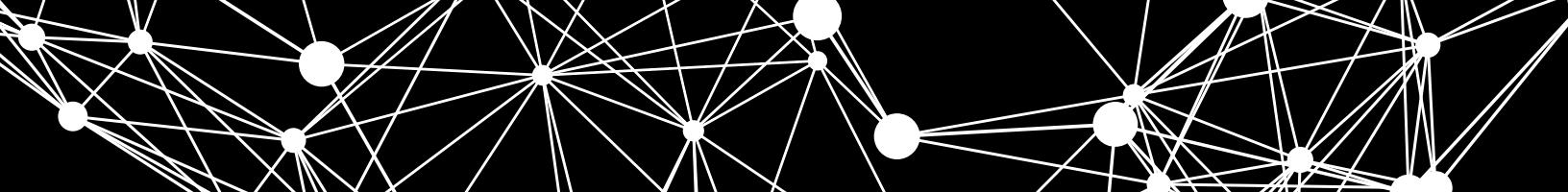
Currently we have the potential to upload any information on the blockchain -- but to what end? When you look at the fabric of the technology you have to think about where it can best be applied; what information or objects require the immutability, security and scalability that blockchain provides. We've seen projects pursued where blockchain isn't required, where other methods actually work better.

Startups and entrepreneurs have to play a bigger role in helping industry identify where we should be investing in blockchain.

Moving from a centralized system, where authority is defined, to a decentralized environment where consensus is shared equally among participating parties also poses its own set of challenges for industry. The largest hurdle will be adapting traditional legal frameworks to determine how smart contract agreements processed on the blockchain are recognized in the court of law. This will require considerate cooperation among stakeholders (startups, industry, government) to share knowledge and determine the best way forward.

"Startups and entrepreneurs have to play a bigger role in helping industry identify where we should be investing in blockchain."





Education And Use Cases Are The Key (continued)

We're at a critical moment with blockchain technology. Industry has woken up to all the possibilities, but careful thought and planning is required to move forward with all the proof of concepts and pilots introduced in 2016. As with any digital transformation the paradigm is not displacement and replacement but connectivity and recombination. Right now, this responsibility is held by both startups, who are custodians of the technology, and with industry players who are investing and creating the environments for where experimentation is taking place. As entrepreneurs our role is to bring imagining into existence and with a technology like blockchain it requires careful thought and collaboration to set the foundation and guidelines for how the technology can and should be applied, and more importantly, under what protocols.

Working at the forefront of a technology like blockchain is exhilarating and comes with its share of responsibility. If we, as an industry, move on implementing projects where blockchain isn't required, we fail collectively.

But if we build out commercial systems where blockchain has the potential to solve critical path and last mile problems, then there is no telling what we'll be able to achieve.

"As with any digital transformation the paradigm is not displacement and replacement but connectivity and recombination."



Demian Brener

Smart Contract Solutions | @demibrener

Project lead at Zeppelin. CEO at Smart Contract Solutions.

Jumping Hurdles: What Must The Industry Overcome, On Its Way To Mainstream Adoption?

Blockchain technology holds the great promise of enabling decentralized protocols, applications and organizations. Much of this enthusiasm is driven by Bitcoin and Ethereum--the main software platforms where the technology is built.

Although designing and developing applications seems to be getting easier, developing distributed apps is still a hard task. It is also important to make the apps secure and that task alone, is an even harder. We've seen \$60m+ lost due to hacks within blockchain-based projects in the first half of 2016. Recent scandals have exposed the many risks and challenges many projects that utilize the technology face: How to write a simple and secure code that deals with real money.

As of now, there is no universal security standard or manual for various projects to follow. There are no tools for developers to easily create, test, verify and audit smart contracts, and do so collaboratively.

In order for a new decentralized web to emerge, more people need to be involved in the reconstruction of the web--from conception to the creation. Unfortunately, this will only happen once the right tools and standards are in place, creating more opportunities and allowing new developers to build innovative products.

Today, only a small group of blockchain experts are capable of building distributed applications. I believe mainstream adoption will happen when we make it

easy and safe for developers to evolve distributed apps. Developers should focus solely on building a functioning product and expanding it, not on becoming blockchain experts. If developers don't always need to understand how Ethernet, ARP, TCP/IP and HTTP work in order to build internet applications, they also shouldn't need to understand how smart contracts, tokens and consensus algorithms work in order to develop scalable blockchain apps.

That's why we built Zeppelin. Zeppelin is an open-source framework to build secure smart contracts. It's meant to provide secure, tested and audited code to enable the new generation of distributed applications, protocols and organizations.

"Developers should focus solely on building a functioning product and expanding it, not on becoming blockchain experts."





Mads Emil Dalsgaard

Funderbeam | @MadsEmil

Mads Emil, Funderbeam's CMO, specializes in building lean, growth-focused marketing teams on early stage budgets. He has experience from startups, including his own, in Copenhagen, Berlin and now Tallinn. MADSEMIL.com.

It's All About Showing Value

I always ask people who say they don't "get" what a blockchain is, whether or not they really "get" the internet. I first heard this question being asked to an audience at a WIRED MONEY talk in Berlin by the CEO and Founder of Funderbeam, Kaidi Ruusalepp.

Typically, the majority of people who understand the internet, also understand the concept of a blockchain, and vice versa—which means, if you don't understand one, you probably don't get the other.

The task at hand for us, as marketers, is not to make people understand how a blockchain works, but instead, it is to show the customer the value of the product and how it can be used in their day-to-day life.

In all developed countries, the vast majority of the population have been internet users for over a decade, but many have no idea how the internet actually works. They all, however, understand the benefit very clearly—because of the internet people are able to keep in constant communication with loved ones, are able to spread ideas and information, and also simply are able to log onto the web and watch a turtle hump a shoe

The internet has crossed a chasm, not because we, as people, understand how it works, but because we all love what it does. **This is also what we need to do with the products we're building on top of the blockchain.**

I believe that, as marketers, we need to internalize and understand this concept ourselves. New technology is fascinating and it is very easy to fall in love with how it works instead of focusing on what really matters to our audience: What it does for them.

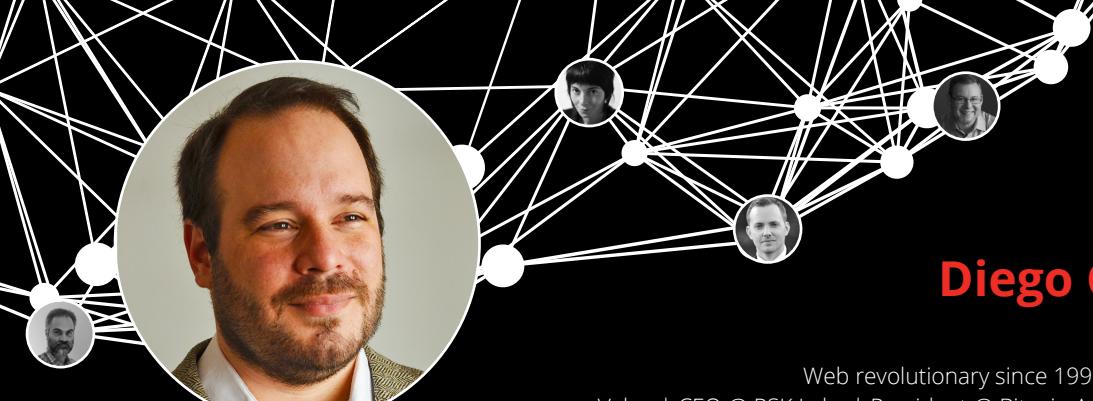
In order for the market and the people to adopt and adapt to our concept, blockchain technology, needs to become less visible. We need to use the blockchain to make products that are faster, better, more secure, and cheaper. The majority of people will not care whether their product uses blockchain or not, as long as it works and does something they need or want.

When the technology becomes less visible and more usable, marketers will be able to focus their attention on transmitting these values to people. This is how the blockchain will be able to continue to move further across the chasm.

In our organization, we've used blockchain to make a stock exchange for startup investments. Although the investors who use Funderbeam to trade investments don't care about the underlying technology, they care about access to liquidity in their portfolio. This is how we are able to market ourselves. Blockchain is simply the technology that allows us to make these trades transparent, fast, and most importantly secure.

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Diego Gutierrez Zaldivar

RSK | @dieguito

Web revolutionary since 1995, true believer in Bitcoin & the Internet of Value | CEO @ RSK Labs | President @ Bitcoin Arg & Latam NGOs | Cofounder @ Koibanx.

Allowing Technology To Reach The Masses

Intermediation has been key to the building of the global society we live in today. Human based trust has enabled the construction of the global economy and has also allowed democracies to continue thriving, as we know them today.

With that said, intermediation has also failed us when middlemen decide to betray the trust placed upon them. On top of that, intermediaries are also costly, which lead to the creation of a global society that excludes half of a population.

Decentralization based on crypto-economies and consensus networks are underway during an important point in history. A moment where the excluded population will also have access to the internet, as well as Smart Phones.

This allows billions of people to have access to many important tools that build reputation based identities, to perhaps get access to basic financial services and to finally achieve a connection with the rest of the population. This creates a tangible solution to stop poverty through integration. This is something no other technology has been able to provide for the masses, as of today.

Based on my experience evangelizing about the Web back in the nineties, I found out that trying to explain how technology works is very ineffective, as opposed to showing people how technology is able to improve people's day-to-day life. So, I think that the best

approach would be to promote the creation of proof of concepts using current technology until we are able to find the one that provides the most value. In my vision, basic financial services and basic security is key for people to understand, but we must show them.

I think this technology still has to evolve from separate platforms providing specific services (settlement networks, smart contracts, payment networks) into a full stack of disintermediated transfer of services which would allow the Internet to form it's value.

Once that the technology is multi-layered, neutral and interoperable ecosystem are in place and the value for different industries is clear, mainstream adoption will be triggered swiftly.

So interoperability and cultural adoption will be the main challenges.

“...basic financial services and basic security is key for people to understand, but we must show them.”

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Aleksandr Bulkin

CoinFund | @coinfund_al

Aleks is Co-Founder and Managing Partner at CoinFund, a blockchain technology research company and private crypto asset investment vehicle. He is a multidisciplinary thinker with a special interest in social and technological innovation. He has 13 years of experience in developing pricing, risk management, and high-frequency trading software at Goldman and Sachs Group, Inc. Holding a dual degree in Mathematics and Computer Science from New York University and a Masters Degree in Organizational Psychology from Process Work Institute in Portland, Oregon, Alex bridges technological insight with social science and psychology.

Immutability, Transaction Finality, And Blockchain Adoption

Blockchain immutability is universally seen to include both irreversibility of transactions and immutability of the blockchain's economic rules. However, I claim that while the latter drives adoption, the former hurdles it tremendously.

Blockchain allows financial systems of unprecedented economic efficiency. Efficiency arises from the fact that no matter what any one person does, the system will continue to function as promised. Consequently, the layers of (mostly human) control traditionally used to ensure that every transaction is valid and sound become entirely unnecessary. This frees up tremendous resources to be dedicated to other needs and makes possible creating small custom economic systems that were previously not viable.

However, immutability is often understood to mean that transactions are completely and irreversibly final. This is a problem for both individuals and institutions. Individual users are facing complicated and unusual software products that, unlike anything else out there, do not have an undo button. Furthermore, the state of the art in security today is such that uninitiated users are simply incapable of protecting themselves from external attacks.

On the institutional level, recovering from human errors, software bugs, and network problems is even more important, because in the context of a large

organization a single transaction may affect a very large group of people.

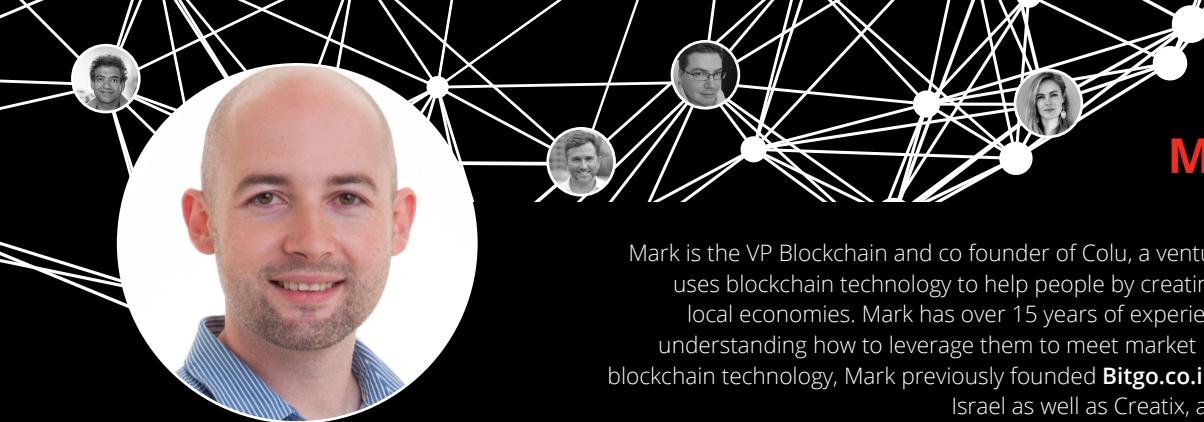
Let's explore three answers currently given to these problems: on the individual level: First, everyone will eventually learn to protect their private keys and correctly use blockchain software. Second, multi-signature wallets, "vaults" and other primitives will allow limited recourse without sacrificing finality and third, at the institutional level, permissioned and consortium blockchain will offer the recourse needed.

All of these approaches miss the point entirely. First, for a majority to learn to use today's tools without mistakes will take decades, and is likely simply impossible. Second, the ability to correct transaction errors and rectify digital crimes is essential not incidental and lastly, permissioned and consortium blockchains are simply distributed databases (i.e. offer nothing new whatsoever) and will not command the public trust any more than current centralized systems.

The end result is clear. The immutability guarantee cannot and should not apply to transaction reversibility. It can only apply to rules governing the way transaction state is agreed upon. If these rules are transparent, reasonable and democratic, then we can have both: immutability and recourse. If this happens a major adoption hurdle for the mainstream will disappear.

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Mark Smargon

Colu | @smargon

Mark is the VP Blockchain and co founder of Colu, a venture capital funded start-up that uses blockchain technology to help people by creating local currencies and building local economies. Mark has over 15 years of experience with web technologies and understanding how to leverage them to meet market needs. An expert in bitcoin and blockchain technology, Mark previously founded [Bitgo.co.il](#), a Bitcoin payment provider in Israel as well as Creatix, a leading E-commerce provider.

New Business Models Are The Tipping Point

Blockchain technology is an interesting social phenomena. From an open source project with an anonymous creator, it reached the table of politicians.

It combined several ideas together in a sophisticated package and built an alternative financial system that challenges banks and proved to be more resilient and secure than they first realized. That sparked a discussion across industries and provided a glimpse of how companies can use the public internet rails to move value and investments soon followed.

For a lot of people this reminds them of the early days of the Internet where investments poured into companies that worked on applying Internet technology for existing players in industries like Telecom companies. But as the 2000's bubble burst, it was apparent that Internet companies didn't reach the anticipated mass adoption and couldn't meet their earning expectations. This only came several years later, when companies like Facebook and Google showed us how to make money from information and billions of dollars started pouring into new Internet ventures.

Telecom companies became ISP's. Retailers moved online and newspapers became blogs. This came from a deep understanding of the long term underlying benefit of the technology, to connect people together on open platforms.

Like with the Internet, blockchain technology is a simple idea - Choose an open source standard for a specific use-case, build a shared ledger, and bring all the participants to use the ledger.

The tipping point for blockchain technology, is when it will create new business models like the Internet did.

The first companies that will prove those models to work will create a huge shift in the business world - from ledger operators that independently control centralized silos of information to a world where outdated business models just don't work because technology has surpassed them.

But this won't be an overnight change - blockchain currently lives in an intersection between coders, governments and corporations. Each stakeholder needs to be an active player in the debate in order for the technology to evolve and it requires a fresh realization that those who won't be a part of the discussion are going to be replaced.

So my suggestion for startups is to work towards getting a seat at this table and focus on the long term benefits of this technology - changing old business models.

"...it requires a fresh realization that those who won't be a part of the discussion are going to be replaced."





Shingai Thornton

@shingaithornton

Shingai Thornton has been researching/investing in cryptocurrency since 2011 and writing about blockchains since 2015. He holds a B.A. in the Social Sciences from the University of Southern California and is currently based in Seattle.

How Will Cryptocurrency Cross The Chasm?

"It might make sense just to get some [Bitcoin] in case it catches on. If enough people think the same way, that becomes a self fulfilling prophecy." - Satoshi Nakamoto (2009)

Cryptocurrency, like all other forms of money, is a largely psychological phenomenon. A shared illusion and product of our imaginations, not a naturally occurring substance. Even physical currencies are backed by faith and social consensus.

Early human communities had faith in a universal appreciation for materials like shells, stones, silver and gold. Today, commercial and central banks are the trusted issuers of currency. Cryptocurrencies are proving open-source software communities can manage global, decentralized digital currencies.

Stanford's Computer Security Laboratory, MIT's Digital Currency Initiative, Deloitte, and Price Waterhouse Cooper supported the 2016 Scaling Bitcoin conference, while Microsoft sponsored Ethereum's Devcon 2. The U.S. Postal Office and Congressional Blockchain Caucus are both exploring blockchains.

In 2017 Ernst & Young Switzerland will accept Bitcoin for its services, and Swiss citizens can now purchase the digital currency from their national railway's ticket machines. Corporate giants BHP Billington, Siemens, and RWE are developing Ethereum-based supply chain monitoring solutions, microgrids, and electric vehicle charging stations.

Like with the early Internet, industry, academics, and enthusiasts are enthralled by visions of potential futures, obsessed with building a faster and more connected world. But mainstream consumers simply aren't interested.

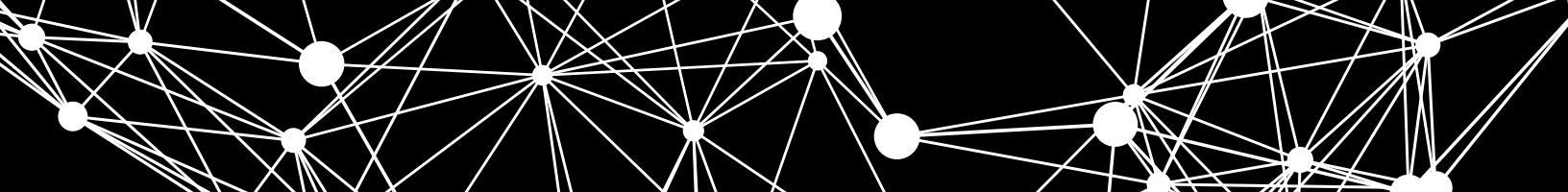
"Even physical currencies are backed by faith and social consensus."

The chasm will eventually be crossed by simply maintaining the current rate of adoption. Organizations who tell stories that evoke strong feelings in non-enthusiasts, especially love and fear, will determine how this happens. Several projects are increasing global economic freedom for niche markets, those that scale will inspire love and optimism about the technology's potential among broader audiences.

Abra allows anyone with a smartphone to become an ATM, "Uberizing" Western Union, bridging the gap between cryptocurrency and traditional money systems. Yours is a social network where content creators will get paid using micropayments. BitFinance, BitGive and BitPesa are addressing key issues on the African continent: high difficulty of international payments, charity transparency, and expensive remittances.

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How Will Cryptocurrency Cross The Chasm? (continued)

Grammy winner Imogen Heap's Mycelia project aims to ensure fair compensation for artists and professionals in the music industry. Ralph Merkle's DAO Democracy is an ambitious proposed experiment in governance, a more direct form of democracy designed for the Internet Era.

As the global economy continues failing to deliver significant growth or shared prosperity, fear will also drive adoption. Currency crises, cash shortages, and market crashes in the traditional economy, along with tempting profits in the cryptoeconomy will cause "fear of missing out," as trusted individuals and institutions

portray digital currencies in an increasingly positive light.

Scaling issues, regulatory uncertainty, and poor user interfaces will block mass adoption in the near-term, so organizations have plenty of time to develop effective storytelling strategies.

"...fear will also drive adoption."



Robyn Scott

Apopolitical | @robynscott

Robyn is co-founder and CEO of Apopolitical, a platform connecting the best ideas and people in government to solve society's hardest challenges. She also co-founded Level Up, a Southern African social enterprise which teaches coding to at-risk youth, and OneLeap, which helps large organisations innovate like startups. She has written an acclaimed memoir about growing up in Botswana. She is an ambassador for the Access to Medicine Index, an advisor to the Responsible Mining Index, a World Economic Forum Young Global Leader and a Gates Cambridge Scholar.

Unlocking Blockchain In Government

It is rare that the public sector is hot on the heels of the private sector's embrace of a new technology. Blockchain, already being piloted by governments around the world, is one such example. But the embrace is cautious. The challenge, although there are many enthusiasts for a blockchain future, is that there are too few examples of what it can be used for today. All governments find it easier to enact something when they can point to it being used successfully elsewhere. Without these, other arguments, like cost, also become stronger. Blockchain, one senior government official told us irritably, is so faddish it is often proposed instead of cheaper – if less sexy – alternatives.

Much therefore depends on the success of the pioneers. The Republic of Georgia, for example, is putting its land registry on distributed ledgers to guarantee its citizens' land rights. (A similar project was announced in Honduras, but seems already to have stalled.) In Estonia, perhaps the world's most advanced digital society, the government already uses blockchain in its tax and business registries, and is planning to extend it to citizens' medical records. The aim is to prevent hacking by providing real-time alerts on attempted attacks and by making it easier identify any data that someone has tried to tamper with. Meanwhile, Dubai intends to move all state documents onto blockchain in the next four years, potentially saving millions of man hours.

The UK is examining paying scientific research grants in Bitcoin, to make monitoring easier. And Australia announced plans to use blockchain for public safety, government communications and food security.

Here are a few governments leading the way:

- **Dubai**
- **UK**
- **Georgia**
- **Estonia**
- **Australia**

There are, of course, serious concerns that go beyond not wanting to be the first lemming over the cliff. For Bitcoin, one is massive currency fluctuations. And for things like welfare payments, which the UK is also trialling, there is a worry about how secure people's personal information will be on a distributed (and global) ledger. But as well as requiring unique safeguards, blockchain also offers unparalleled opportunities. A collaboration between the UN and private enterprises. Called ID2020, it is exploring blockchain as a means of providing everyone in the world – every refugee, every victim of human trafficking, every girl in a mud hut in the developing world – a means of proving their identity, and getting help. If one such initiative works, governments everywhere will mobilise.

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Josh Seims

MetaStable Capital | @jseims

Joshua Seims is a partner at Meta Stable Capital, which manages a portfolio of digital currencies. This fund invests mostly in crypto assets other than Bitcoin, so as to provide their LP's exposure to the wider ecosystem of these cryptographic tokens. He has a BA in computer science from Harvard University.

The Hedge Against Bad Government

In many ways, I see decentralized digital currencies as being a hedge against bad government.

We saw a hint of this in the 2013 economic crisis in Cyprus. Their entire banking sector threatened to collapse due to bad loans, and in response the government seized portions of people's deposits. The price of Bitcoin increased by a factor of 10.

Every major economy in the world is engaged in massive quantitative easing. This has never happened before, and no one knows how it will end. Will there be massive inflation? If so, crypto assets are a great inflation-proof store of value. Will China clamp down on the flow of capital seeking to leave? If so, wealthy citizens will look to put their money in a form that no government can touch. And all it takes is one major economy to melt down some time in the future for this dynamic to occur.

Today, gold is used as an inflation hedge (due to its limited supply) and as a way to hide wealth (due to its fungibility). Bitcoin has all these advantages and many more. Its supply is far more fixed and predictable. And it can be moved as bits over the Internet.

One disadvantage of Bitcoin (for its use as a place to hide wealth) is the blockchain is completely transparent. But currencies with strong anonymity already exist (Monero), and ones with mathematically perfect anonymity (zCash) are right around the corner.

So as long as Bitcoin exists, it is trivial to facilitate conversion between Bitcoin and one of these anonymous currencies. All it takes is a server somewhere in the world -- no connections to the legacy financial world are needed. So long as Bitcoin remains legal, it will be impossible to stop fully anonymous currencies.

The value of the world's gold supply (\$7.5 trillion) is over 600 times larger than the sum total of all digital currencies (\$12 billion), so there's a lot of room digital currencies to explode as people look to them as stores of value free from the interfering hands of government.

"Today, gold is used as an inflation hedge (due to its limited supply) and as a way to hide wealth (due to its fungibility). Bitcoin has all these advantages and many more."





Neeraj Agrawal
Coin Center | @NeerajKA

Neeraj Agrawal is the Director of Communications at Coin Center, the leading non-profit research and advocacy group focused on the public policy issues facing cryptocurrency technologies such as Bitcoin. He leads the organization's marketing and public relations programs. Previously, he worked on global internet infrastructure and governance issues for a major technology company. He is a graduate of Syracuse University and is currently based in Washington DC.

Focus On What We Can Deliver Now

Coin Center is a non-profit think tank that exists to defend your right to innovate with cryptocurrencies like Bitcoin and Ethereum, rather than a for-profit company with a product to sell. That makes our view on marketing a little different.

In our case, the “customers” are policy makers that are thinking about this technology. Our product is education and new policy thinking on cryptocurrencies. We have built a reputation as honest brokers that will clearly and concisely answer questions about open, permissionless, blockchains for policymakers (and the media). We are constantly called upon as a resource for those outside of the cryptocurrency bubble who want to understand what is going on with this boom in decentralized technology. Through those discussions we have been able to get a sense of how mainstream audiences think about this technology and its surrounding industry.

There are a lot of people out there who think that “blockchain” is going to fix everything. This is no small part because of the promises made by companies in their marketing. Go to any decentralized product’s website and you will see vague visions and grand plans to completely change the world. With expectations set so high you will only have so many chances to deliver before your audience tunes out.

We find that by focusing on exactly what the technology can deliver now, or on what we know for a fact is a uniquely differentiating capability that it has, you can still wow your audience without burdening yourself with a need to meet inflated expectations down the line.

Instead of touting what your thing could one day do, try thinking along the lines of what you have built and what it can do today. What may seem like old hat to those of us that think about cryptocurrency daily is still pretty amazing to the outside world.

In the case of Bitcoin, we know that things like microtransactions, nearly instant global payments, machine to machine payments, and the opportunity for innovation that a permissionless platform fosters are the main “here today” talking points. While perhaps widespread consumer applications of those capabilities are still a little ways off, we can definitively prove that they are real and demonstrate them right then and there. And that’s interesting.

When we engage with policymakers we have to be real and lay out the situation as it is today: this is a platform that will one day allow incredible innovations that we cannot imagine, because today it can do these specific things that didn’t exist before, and because it’s open. We may not know what those future innovations will look like but we do know that keeping the regulatory way clear for developers will be a key factor in encouraging their invention. That kind of plainly stated assessment has lent credibility to our messaging, and perhaps will for yours too.

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Phil Windley

Sovrin Foundation | @windley

Phil Windley is an Enterprise Architect in the Office of the CIO at Brigham Young University. He is chair of the Sovrin Foundation, a passionate tech educator and the co-founder and organizer of the Internet Identity Workshop. He also serves as an Adjunct Professor of Computer Science at BYU, writes the popular Technometria blog, and is the author of the books *The Live Web* published by Course Technology in 2011 and *Digital Identity* published by O'Reilly Media in 2005. Phil serves on the Boards of Directors and Advisory Boards for several high-tech companies.

Digital Identity Will Be The Chasm-Crosser

In the physical world, people carry credentials to prove to others that they have certain attributes or hold certain privileges. Online, this is not possible.

For example, a driver's license contains many attributes like name, address, and date of birth that have been validated by the Driver's License Division. The driver's license is widely viewed as a document that is trustworthy. Consequently, people use driver's licenses for purposes other than driving. For example, a school or pharmacy can easily verify that a license belongs to the person presenting it, and confirm the validity of the license without ever contacting the Driver's License Division directly.

In other words, in the physical world, *people hold and are the conveyors of their own trustworthy attributes* (called "claims" by identity experts). These attributes can be used when needed and without prior agreement. Online, such interactions are only possible through pre-arranged integrations between the API's of specific computer systems.

Identity systems in use today, include *federation* for business-to-business credential sharing, and *social login* for consumer authentication. Neither of these offer a foundation upon which third-party claim issuers can easily build services that allow for the kind of ad hoc attribute sharing that happens in the physical world. Consequently, entities who want to rely on attributes from many parties have to perform integrations with all of them. This is slow, complex, and costly, so it only typically happens for high-value applications.

Decentralized identity systems, like Sovrin, have built-in support for third-party claims that function in the same way physical credentials work: they're presented directly by the identity owner.

The identity owner can use a claim from one party to disclose attributes to another party regardless of the relationship between the parties, much less a technical integration.

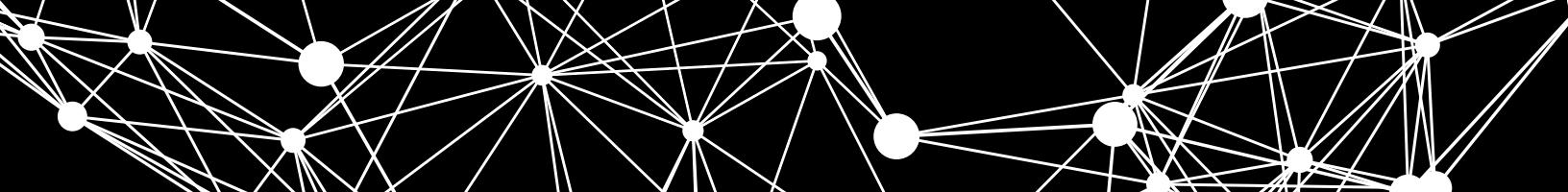
"...in the physical world, people hold and are the conveyors of their own trustworthy attributes."

Claims can be used in ad hoc situations, just as they can in the physical world, allowing individuals to function as integration points. When you can instantly trust what someone says about themselves, workflows and integrations are dramatically simplified.

There are other benefits to owner-provided attribute sharing. First, when owners share attributes, the receiver automatically gains consent to use the attributes for the requested purpose, this significantly reduces liability. Second, when the owner is part of

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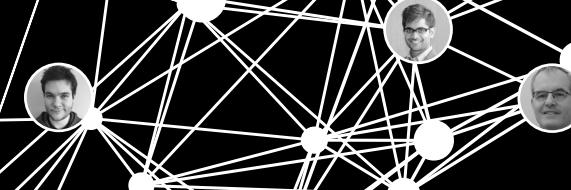


Digital Identity Will Be The Chasm-Crosser (continued)

the process, so they can check the accuracy of the attributes as they're being shared, resulting in better data.

Owner-provided attributes are a powerful driver that will push decentralized identity systems well beyond the current uses of federation and social login. Businesses can reduce or even eliminate API integrations and manual verification processes, and instead trust what's presented to them by customers, because the claims can be verified. Customers are now the source of what's true about them. Businesses will find great value in this, driving adoption by individuals as customers are brought into decentralized identity systems through day-to-day business activities.

"Owner-provided attributes are a powerful driver that will push decentralized identity systems well beyond the current uses..."



Udit Sharma

IBM | @UditNY

Udit Sharma is the Account Manager for IBM Global Services Public Sector accounts. He has a Bachelor's Degree in Computer Science and Engineering as well as an MBA with specialization in IT and Marketing. He is trained in Design Thinking methodology and its application to solving clients' issues and problems. He has keen interest in AI/Genetic Algorithms, Business Data Analytics driven decisions and Blockchain Applications. Udit was also the co-author of the winning paper at the ONC blockchain Challenge 2016 for "Applications of blockchain to Health IT" and is currently based in New York City.

Blockchain Blueprint Across Marketing Chasm

Human progress has been a steady march against challenges. From the introduction of money replacing barter to the replacement of wax seals by digital signatures, we have seen steady progress facilitated by innovation. Today, three types of challenges predominate: information, interaction and innovation. A blockchain distributed ledger for business has the potential to eliminate these challenges. They are currently shared by an unbreakable chain that is a permanent record, viewable by the parties in each transaction. Blockchains shift the lens from information held by an individual owner to the cross-entity history of an asset or transaction.

This will be a new economic equation for organizations, trust and value exchangers who operate autonomously and as part of a self-governing, self learning network. Distributed ledgers can become the foundation of a robust system of trust and a decentralized platform for massive collaboration. The result shall be that intermediaries will be shuttered. Assets that were once dormant can be exploited while profit pools can shift and be redistributed. This can liberate those that were once locked out of efficient value creation to fully participate in an all-in economy and accelerate access to new services delivered on blockchain networks.

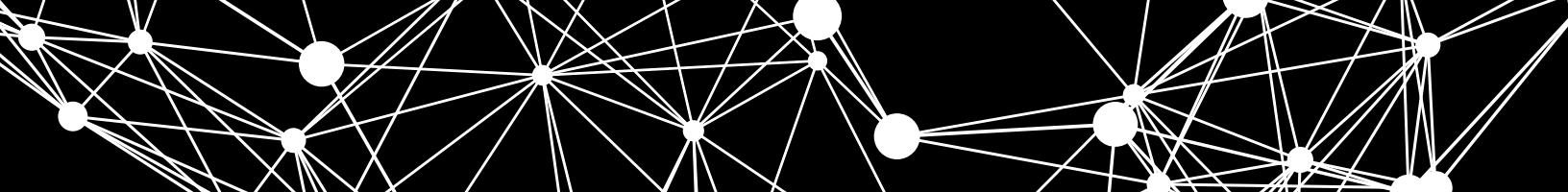
Blockchain networks can provide commerce attributes of assurance and provenance helping the creation of new markets that foster value exchange across the whole digitized world.

The current landscape of mobile apps shall give way to a new generation of decentralized apps making blockchain technology accessible to diverse groups of people and entrepreneurs across geographies giving a level playing field to all.

Blockchains shall also speed up the flow of capital and the creation of wealth, our economy and interactions heading toward something more like perpetual motion than one with roadblocks and challenges.

"Blockchain networks can provide commerce attributes of assurance and provenance helping the creation of new markets that foster value exchange across the whole digitized world."





Three Possible Routes Across The Marketing Chasm (continued)

Businesses must constantly evaluate blockchain for the greatest gains and where there are none for this technology. While blockchains can be extremely powerful in their ability to overcome roadblocks and improve efficiency, trust and value from blockchain, businesses should answer these three questions.

1. New Scalable revenue models?

Implementation of new technologies is tough, but it is crucial to understand how it can help businesses profit and scale quickly. Eg. Consideration of business models and markets that will benefit most from consumption based pricing, licensing and micro-payments. Also, the need to understand how blockchain will extract further value from other technologies, such as big data analytics, the IoTs and cognitive computing etc.

2. Early Movers?

First movers and early adopters can position themselves for quicker returns and sharper competitiveness by leveraging blockchain efficiencies. The need to identify the most compelling use cases by considering which challenges are holding back the enterprise and evaluate in the current environment and the future state.

3. Achievement of network-wide accepted standards?

Recognizing the need for global standards is necessary because blockchain innovation may accelerate faster and scale further than the internet did, which means that there should be requirement standards even sooner. Success in blockchain adoption is dependent on not only the best technology, or app, but ability to build the strongest network. There also needs to be a consideration of how one's ecosystem could best benefit from network effects, and how profit pools might be redistributed in an industry or ecosystem—the blockchain as the new business environment and collaboration the optimal way of working.

“...businesses should answer three questions.”

NOTE : The views expressed here are my own based on my understanding of blockchain and its usage and not necessarily of my organisation.



Tatiana Moroz

TatianaMoroz.com | @QueenTatiana

Tatiana Moroz is a soulful and outspoken singer-songwriter, and the premier artist in the Bitcoin and Liberty activist communities. Her next album *Keep The Faith* is set to be released early 2017 having been funded with cryptocurrency. Tatiana is the creator of TatianaCoin, the first ever artist cryptocurrency. She is a driving force in the industry, and also the Founder of Crypto Media Hub, a PR, marketing and advertising agency for the Bitcoin space. "The Tatiana Moroz Show" podcast streams on several outlets including the Let's Talk Bitcoin network and is quickly growing with thousands of listeners a week.

Music And Technology: Making A Difference For Artists And Listeners

Crossing the chasm for Bitcoin to achieve mainstream adoption is something that people find really tricky. I call upon my own delayed adoption as a clue. When I first heard about Bitcoin, it sounded so technical. My brain immediately shut off. But what made me light up and write a song about it was the creative possibility. As I was able to imagine a better world because of this technology, and what that would look like, I became inspired. As a result, my approach to further adoption has been to share the way that resonated with me, which is by illustrating the way Bitcoin could help people.

Many times, tech evangelists are only able to communicate the actual technology, but not the motive and the vision of its potential usage. I love seeing Bitcoin in action and telling stories about what I have seen because I have concrete examples of how it can empower people around the world. I have been able to show how it can be used to eradicate poverty, and it doesn't need to be politicized. It challenges the way we think about money, and regardless of all of the difficulties the world is facing, it's allowing and causing people to ask more questions and be open to alternative methods. I think painting a picture of a more free and equitable society, and giving an emotional connection to that future is a wonderful way to bring people into the Bitcoin ecosystem. It also has to be fun!

That's another reason why I love spreading this message through musicians and their individual music, because music crosses all cultural, color, and class lines. People trust their musicians, and the messages they spread, therefore musicians have a responsibility to use their voices to help mankind. We are reflections of the world, and can ask the questions that challenge us to do better. This convergence of a multitude of technologies with the arts, culture, and awareness is primed to bring our society to the next level of civilization. That's exciting! How could people not want to be a part of it?!!?

"People trust their musicians, and the messages they spread, therefore musicians have a responsibility to use their voices to help mankind."

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Cyrus Maaghul

Health Combix | @healthcombix

Cyrus Maaghul is a lifelong entrepreneur and innovator exploring how blockchain, smart contract, and decentralized autonomous organization technology and constructs can be applied in regards to solving healthcare industry problems. He is the founder of HealthCombix, a healthcare blockchain development company and PointNurse, a Nurse Practitioner led telehealth collaborative.

Decentralized Healthcare And The Blockchain

The blockchain as a decentralized technology, along with its current and future derivatives, offers the world an opportunity to revolutionize the current healthcare system by shifting control of the data from centralized authorities to the hands of the rightful owners of that data, the healthcare providers and patients. This is particularly viable, not to mention exigent, in the United States which is entrenched in a system rigidly controlled by electronic healthcare records companies, for-profit hospital systems, middlemen exchanges, and insurance companies. However, as new digital health applications emerge, consumers are beginning to see the benefits of proactively managing their own health data and how the use of advanced technologies can help maintain their health and management of disease states.

The U.S. healthcare industry suffers from many problems including either blocked or difficult to access patient records, disparate systems, misaligned and perverse care incentives, valueless intermediary organizations, and poor data quality control. Consumers are frustrated with privacy breaches, not having access and control to their critical, self-sovereign healthcare identity or biomedical information. As a consequence, neither consumer nor provider are in control of the flow, use, or access of this information. They are currently forced to entrust their lives and practices to intermediaries which have failed as stewards of the quality, security, and management of the information.

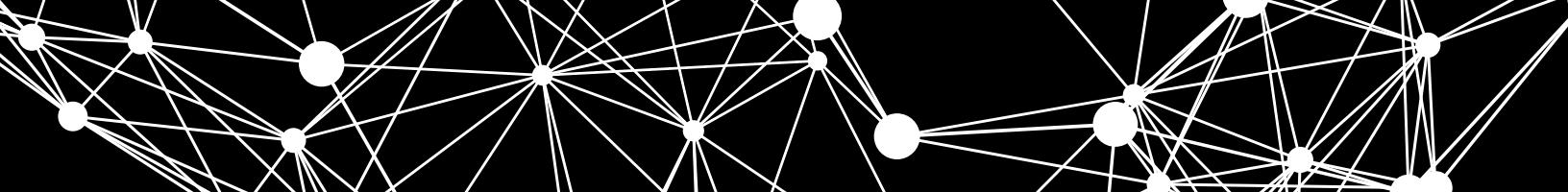
“...intermediaries have extracted unjustified profits from the system while overseeing one of the poorest performing healthcare systems in the developed world.”

According to researchers around the globe, these intermediaries have extracted unjustified profits from the system while overseeing one of the poorest performing healthcare systems in the developed world.

The power of this conversion, or inversion if you will, from a centralized to a completely decentralized consumer and provider managed healthcare infrastructure has the potential to create new types of high quality, cost efficient, precision medicine delivery and care that is not possible today because data remains locked up in disparate data silos.

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Decentralized Healthcare And The Blockchain (continued)

The use of an open distributed ledger or blockchain could enable real-time access and monitoring of personal health data by always ready clinics, proven digital health applications, research groups, and population health managers. This has the power to unleash new methods of healthcare delivery, early disease detection, treatment recommendations, and prevention of community outbreaks of deadly diseases.

In a peer-to-peer world, consumers or their trusted caregiver would have complete and direct managed control over access to their healthcare data, safeguarding its privacy by controlling the granting and revoking of access to requesting providers and institutions, devices, bots, or artificial intelligence-driven medical diagnosis and prevention apps.

The future holds many new empowering healthcare and biomedical analysis technologies that are able to monitor and update consumers 'health score' in near real-time, as they integrate their lives with devices that collect and process their self-sovereign data. These types of medical inventions have the potential to improve pre-emptive care, save the lives of millions,

and increase longevity. For this to happen in a socially responsible and highly secure manner, the consumer or caregiver, not the monolithic organization, must gain and maintain control of access to use their personal health information. This is key because with mass adoption, outcomes will improve while system costs decrease, which means that there is a win for everyone.

"These types of medical inventions have the potential to improve pre-emptive care, save the lives of millions, and increase longevity."





Siraj Raval

Sirajology | @sirajology

Siraj is the Columbia University educated, YouTube star of the popular Computer Science show Sirajology and is the author of **Decentralized Applications: Harnessing Bitcoin's Blockchain Technology**. Siraj worked at the robotics lab speeding up feature classification for surgical robots, as well as at Meetup as an iOS engineer and Twilio as a Developer Educator. He lives in San Francisco, California and during his free time loves to play keyboard for his band 'Warm Beer' and practice Jeet Kune Do.

Decentralization, The New Democracy

A decentralized organization gives a voice to its employees and it allows the power to be spread more evenly amongst everyone. Company practices and milestones are made auditable by many and can be stored in a decentralized storage network for optimal resiliency. Humans don't need to be the only ones making decisions: smart contracts can take on roles, like paying people by a certain date. DOs don't need to be based in a certain city either, members can be spread out globally. In some systems (for example, Bitcoin), collusion is seen as a bug. On the other hand in a decentralized organization, collusion is a feature. In the political realm, we call decentralized power, "democracy." We're seeing some startups recently opt for a more decentralized structure, especially as remote collaboration tools like Slack and GitHub progress.

"A decentralized organization gives a voice to its employees and it allows the power to be spread more evenly amongst everyone."





About Never Stop Marketing

Never Stop Marketing helps companies with blockchain-based or distributed solutions to accelerate market awareness, improve market perception, and drive measurable growth— all with reduced risk.

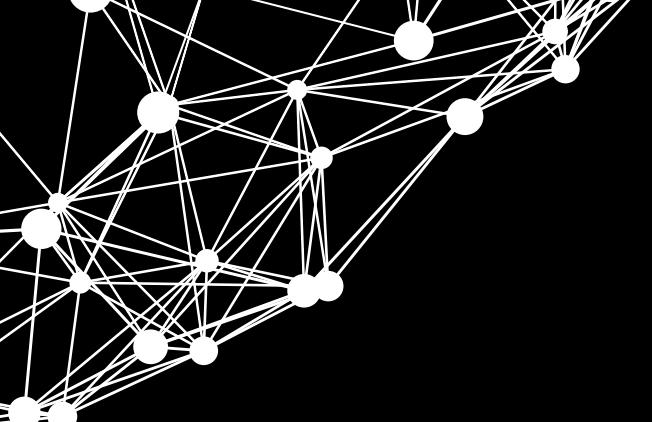
Relying on a tested and proven methodology for the era of connected and empowered customers known as “Community Driven Marketing,” executives in the blockchain and decentralized industry who are looking for marketing results will:

- gain assistance in strategy, execution, and measurement to grow awareness
- improve their positioning and messaging to heighten differentiation and build brand
- understand how to programmatically leverage natural communities and word-of-mouth to drive cost-effective acquisition
- prepare their marketing organization to scale

Never Stop Marketing works on a fixed-fee basis to minimize risks, and receives partial compensation in company equity, so your interests and ours are aligned.

Never Stop Marketing serves companies such as OpenBazaar/OB1 among others.

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