



Blockchain, Cryptoeconomics, and the Disintermediation of Trust

By:
Chami Akmeemana
Managing Director Global Markets
Global Risk Institute

Evan Stubbs
Chief Analytics Officer
SAS A/NZ

What do I need to know?

As the technology that creates a distributed ledger, blockchain is creating significant waves of disruption in industries, processes and business models revolving around the centralization of trust.

This is far broader than just crypto currencies; this technology offers the potential to create autonomous corporations, change the nature of border control and identity management and otherwise disrupt agents reliant on being the central source of truth.

Individuals, organizations, and government agencies must consider the potential impacts of blockchain on their business model and begin to plan their strategies.

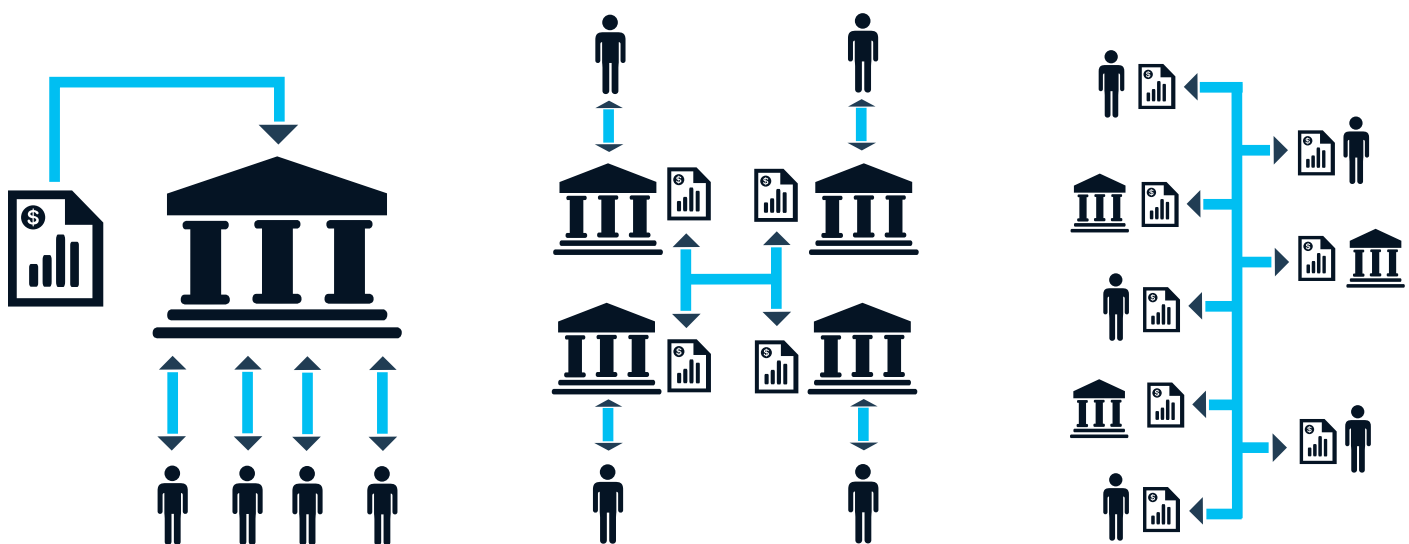
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What is it?

Block chains are distributed databases, using sophisticated cryptography and consensus to ensure end-to-end transactional integrity without the need for a trusted central party. Public blockchains deliver participants an immutable history of all transactions stored on

the database. This permanent record, visible to all actors, overcomes the 'double spend' problem of digital goods by enabling buyers and sellers to instantaneously verify that funds and goods are available when executing a transaction.

In simpler terms, what bittorrent did for file transfers, blockchain can do for trust.



Centralised Ledger

Private Blockchain Ledger

Public Blockchain Ledger

“The central book of cows”

Consider a time without banks, governments or other central institutions to enforce trust among unknown actors. Proving ownership in this world would be a constant challenge. Imagine that Alice and Bob own neighboring farms. Their relationship is somewhat acrimonious given that Bob covets Alice’s cows.

Now imagine that Alice wakes one day to find that Bob has stolen one of her cows. Even though Alice and Bob both know the truth of the matter, proving this to Chris, an impartial third party and local enforcer, is near impossible. Even if Alice could produce evidence of ownership, in the absence of a trusted counter-party Bob can always insist that the records were falsified. Equally, Bob could invent his own papers to “prove” ownership. Without clear evidence, the best Chris can do is to listen to both parties and make a subjective judgment.

Trading things of value in this world would be fraught with risk; even relatively simple exchanges could be faked or otherwise repudiated. One solution would be to centralize trust into a single arbiter. This arbiter would be responsible for maintaining a central book of cows. Whenever a trade takes place, the trading parties would meet with the arbiter who would witness the trade and update the book. Proving ownership would simply involve asking the arbiter to check their book.

While a good solution, the model of a central arbiter of trust is not without its own problems. The person who manages the list could be open to corruption or bribery. There could be deliberate or accidental errors in the ledger, incorrectly allocating cows to the wrong individuals. As a natural monopoly, they may be inclined to rent-seeking behavior, charging exorbitant fees for their services. They may only be available for certain times during the week, delaying transfers based around their

Brett King is a 5 times Amazon Bestselling Author including *Augmented: Life in the Smart Lane*, the host of the world’s largest dedicated FinTech Radio Show and Podcast, and the founder and CEO of the world’s first downloadable bank account, Moven.

“As we go real time, as infrastructure becomes smart and as global barriers to commerce drop, physical currency is essentially a hurdle to efficient commerce. It’s too slow and too difficult to handle safely. Specific currencies that today are geographically bound appear largely arbitrary, except that they remain accepted by large groups of people willing to recognize the value of that currency in local commerce. The banking system of 2025 will need to work more like an IP, or peer-to-peer, network than the current centralized banking networks that we have today; and the blockchain is a better, future-proof example of that.

We are moving to a world where smart devices can have a value store or multiple value stores and can act as agents transacting on our behalf or on behalf of a group of people. We’re also moving to a world where identity won’t be tied to your driving license, signature or social security number, but instead managed as a construct based on biometrics, unique identity markers, behavioral data and heuristics. Identity could itself be managed on a blockchain, as could contracts, assets and other information that need to be secured in a distributed, redundant system of record. Regardless of the value stores, transactions, payments and currency we will have in the future, what is certain is that the banking system won’t be based on current bank regulations, the product structures we are familiar with, the physical artifacts we currently carry and the major banks brands we see in banking today. The current financial services ecosystem is no longer future proof, no longer secure, no longer efficient and is ready to be disrupted.”

own convenience. Ultimately, the success of the system is entirely dependent on the trust that traders place in the person managing the book.

Leanne Kemp is the founder & CEO of Everledger - a digital global ledger that tracks and protects items of value. With a wealth of successful startup companies under her belt, Leanne is pushing boundaries in protecting the global market of diamonds and luxury items.

“Everledger has developed a global register of diamonds, on the blockchain, by capturing the stones ‘Digital DNA’. This enables banks and insurance companies to risk profile not only the owner of the stone, but the underlying object itself. The technology will be applied to many other valuable assets in the exact the same way, extending Everledger’s horizon beyond diamonds into the world of art and luxury goods. Everledger is a permanent, digital global ledger for diamond certification and transaction history which tracks and protects items of value providing insurers, banks, law enforcement and other stakeholders with an immutable provenance.”

Jason Bates is co-founder of 11:FS, an all-star fintech consultancy that helps banks and insurers accelerate digital transformation. Jason recently co-founded two new digital banks in the UK (Mondo and Starling) building new digital customer propositions, products, teams and communities from scratch.

“While distributed databases have been around for many years, distributed ledger technology describes something more: a network of synchronized databases run by different companies (and individuals) who don’t have to trust each other. That shared infrastructure can manage and control the flow of assets quickly and securely, removing the need for central administrators, clearing houses, or complex chains of intermediaries.

So while blockchain isn’t a silver bullet and real impact is 5-10 years away, if you aren’t involved in creating your industry’s distributed ledger platform now, you are going to be at a significant disadvantage in the future”

An alternative solution to centralizing trust is to distribute it. This would ensure that every exchange is witnessed by a minimum quorum of people from the town. Once witnessed, they would cross-reference and validate them on the spot and then note the transfer in their personal trade book, and distribute a copy of the update to everyone else in the town.

This distributed-trust model overcomes the key problems with the central arbiter. The bribery and corruption risks are addressed by distributing the transaction approval authority among the quorum. Mistakes and outright fraud are prevented by transactions being validated and approved by the group before being committed to the book and copies of the book accessible to all parties at all times. Removing the central authority also removes their ability to charge monopoly fees for their services, making cow trading more efficient. Finally, this model improves convenience as trades can take place at a time convenient to the buyer and seller, without being reliant on the keeper of the ‘central book of cows’ being awake and available.

In this system, trustworthiness is independent of any single one of the participants. In fact, the system continues to work even when everyone actively distrusts each other!

From cows to blockchain

A public blockchain mirrors this distributed trust model. It’s often called a distributed ledger, a fancy way of saying that every record is shared by everyone who’s involved in any given blockchain. Participation is open to any interested party and updates can be triggered by anyone but need to be validated by a majority of participants before they’re written to the blockchain. And, as every update is dependent on one earlier in the ledger, it creates a lineage of transactions; a “chain” of “blocks”, if you will.

The nature of this lineage makes the ledger inviolate. Because updates are chained, dependent on prior ones, and validated by consensus, falsifying prior transactions is impossible without controlling a majority of peers within the blockchain.

Private blockchains are equally feasible. Rather than being a decentralized database that can be updated by anyone, one or more central parties control who has the ability to update the ledger. These private blockchains gain transactional speed by having fewer parties needed to achieve consensus. However, they lose openness, distributed trust, and their resistance to falsified records through sheer scale of client participation. Both models enable different forms of product and service innovation.

Where did it come from?

To many, blockchain and Bitcoin are indivisible. Originally outlined in a paper written in 2008 by Satoshi Nakamoto (likely a pseudonym), blockchain provided the public distributed ledger that allowed users to record transactions carried out in Bitcoins.

An open source implementation of Bitcoin, including the blockchain database, was released in 2009. Using a peer-to-peer framework, Bitcoin provided users with a de-facto digital currency. One of the first cryptocurrencies, Bitcoin's true innovation has been through being the world's first decentralized digital currency.

Since its introduction, Bitcoin and other cryptocurrencies have proved highly controversial. Transactions are tracked not by personal identity, but by an arbitrary Bitcoin "address". As many addresses can be generated within a wallet as desired. This pseudonymity initially made Bitcoin an attractive platform for money laundering and the exchange of illegal goods such as guns and drugs, most famously through part of the dark web called

the Silk Road. Since 2013, increasing numbers of mainstream websites have started to accept Bitcoins including OKCupid, Expedia, and Microsoft.

While blockchain was invented as a part of Bitcoin, the architecture is independent of Bitcoin and has been repurposed for other uses.

How does it work?

The blockchain involves two concepts: transactions and blocks. Transactions are the items of interest to be noted within the ledger. In the case of Bitcoin, they represent any transfer of Bitcoin from one address to another.

Justin Herzig is the Lead Blockchain Strategist for Capital One and a vanguard with blockchain technology for financial services, helping enterprises realize the immense potential of blockchain technology.

"There is no question in the significant value of blockchain technology, but businesses are still struggling to identify and capture the benefits. For enterprises, 2015 was about education. Internal education on the technology, playing with different applications and platforms in labs, and the beginning of proof-of-concepts within their businesses. But 2016 is the real race to production, and it starts with enterprises identifying the initial use cases."

"The blockchain needs to move from a noun that could solve all your problems, to an adjective that enables solutions. Businesses must understand the potential of the technology and how it can enable things previously impossible, however must still construct their objectives around a robust business case, advancing to the selection of technology thereafter. It is at this time when blockchain technology becomes another tool in a tech organization's arsenal that it can begin to be incorporated into both business and technology agendas, rather than force-feeding it through the pipeline with simply a silver star around the word blockchain."

Once executed and broadcast across the network, these transactions need to be registered, validated, and distributed. Blocks are permanent records of transactions. To create a block, peers on the network (also termed “miners”) compete to solve a computationally difficult mathematical problem. These problems are designed to be hard to solve but fast to

Susan Ramonat is Blockchain Program Lead and Chief Risk Officer at SEI Investments. She graduated magna cum laude from Princeton University.

“Blockchain technology should be viewed primarily as an enabler of business process transformation. While the libertarian ideal suggests the end of intermediaries, many use cases require an ensemble of trusted parties.”

Nicolas Cary is Co-Founder & President Blockchain. A life long technologist and serial entrepreneur, he’s trilingual, and has a deep passion for positive digital disruption. His company Blockchain is the world’s leading Bitcoin software company. Blockchain has over 6 million users, they run the most widely trusted block explorer, and manage the most widely used developer platform in the Bitcoin eco-system.

“A free, open source app, that anyone in the world can download, can completely replace someone’s need for a bank. Let that sink in for a moment. The system is so reliable the Bitcoin blockchain has been running without interruption 24/7/365 for over 7 years now; a feat which no backend banking system can claim. What is the blockchain? It’s a global clearing and settlement system based on peer-to-peer technology anyone can use. It doesn’t matter what country you were born in, what your gender or age is, or even what your credit score is. The blockchain is basically a big spreadsheet in the cloud that’s an immutable recording keeping system. There is no centralized risk, and it keeps track of digital property rights. Today, it’s being used to facilitate digital cash transactions soon it will be used for much more, including general asset tacking, smart contracts, and much more. It’s an incredible invention that will help bring huge digital efficiencies to any market that currently relies on intermediaries.”

check; once solved, any peer on the network can validate that it’s a correct solution.

Being the first to solve one of these problems awards a Bitcoin “prize” along with the right to submit a new block to the network. Transactions not yet recorded are encoded in a new block along with a hashed reference to next most recently calculated block. This block is then distributed across the network, checked for validity by other peers and if correct, added to their ledger. To avoid over-production of blocks on the network, the difficulty of these problems are scaled over time to ensure an average of 6 problems solved per hour.

In the event that two or more miners find a solution simultaneously thereby forking the chain, the network will detect this fork and prune one branch. This lineage creates a chain that dates back to the very first transaction, hence the name “blockchain”. Every peer within the network has at least a partial copy of the blockchain contained in their personal ledger. Equally, every peer has the ability to validate transactions, update their own ledger, and pass updates on to other peers within the network.

As a system, the blockchain provides financial incentives to participate along with eliminating the need for a trusted counter-party to validate transactions. False transactions inserted into the network will be immediately rejected unless a majority of peers have already been compromised.

In short, the blockchain provides participants with a distributed database that can be updated by anyone but also validated by all prior to committing any updates. Once committed, the ledger is immutable unless a majority of peers within the network are compromised. And, it can do the above without the need for a central controlling agency.

Why is it important?

Blockchain is important because it represents the latest in an ongoing trend towards decentralization, disruption, and disintermediation. It promises to disrupt business models and processes reliant on centralized trust. While it's unlikely to lead to existential threats to specific industries, it will almost certainly force moderate to significant change to many business models.

One of the cornerstones of digital disruption is the decentralization of control, starting with the invention of the Internet. Open and standardized network and communication protocols like TCP/IP, HTTP, and SIP shifted the network away from point-to-point systems with embedded applications towards mesh-based systems with generalizable applications. Rather than being constrained to what the network operator would let you do, these protocols allowed individuals to re-purpose the network as they saw fit.

Prior to the Internet, communication was centrally controlled. Voice calls were managed and routed by telecommunications companies like AT&T, online presence was coordinated by networks like CompuServe and Prodigy and media was created and distributed by broadcasters like Time Warner Cable. By decoupling the software from the hardware, the software 'ate the network'. Rather than being reliant on assets controlled by a vertically integrated supplier, any peer on the shared network could create their own equivalent communication services using agreed standards.

This led to large-scale disruption. Fixed-line telephony has been cannibalized by voice over IP services. Expensive purpose-built video-conferencing services have been cannibalized by low-cost consumer applications like Apple FaceTime and Google Hangouts. It eventually led to the decentralization of content creation,

allowing anyone with a camera, and keyboard, and an Internet connection to broadcast their thoughts to the world. Technologies like bittorrent led to the decentralization of content distribution, enabling large-scale file sharing and the rise of general public piracy.

In every case, decentralization has led to disintermediation and disruption. The shift of control from the center to the edge decreases the need for the center and in doing so, disrupts established business processes. This creates both opportunities and threats.

Tim Draper is the founder of Draper Associates and DFJ and has made investments in more than 30 Blockchain companies. He bought Bitcoin from the Silk Road Auction.

"Blockchain and Bitcoin have created technology that is open and transparent, frictionless and secure. This technology is bigger than the Internet. While the Internet transformed music, communications, information, entertainment and transportation, blockchain and Bitcoin will allow governments to be virtual, banks to be unnecessary, ownership to be ironclad, insurance to be frictionless, and we will all know who owns what. Hackers will be out of business. This is tremendous!"

Arno Laeven is Head of the Blockchain Lab at Philips. The goal of the Lab is to create a strategic, technical and legal framework for the use of Blockchain in Healthcare and in Philips. Part of the approach is to build prototypes and demos for use cases in Healthcare.

"Blockchain is an infrastructure that enables new applications in many industries, but the infrastructure is still very nascent and needs to mature not only through technical advance but also in adoption of standards. Open source requires open standards and open innovation in collaboration to speed up the development of Blockchain applications. How fast Blockchain will scale is not only a matter of technological advance but also of collaboration cross-industry".

Blockchain represents a technical solution for the decentralization of trust. Industries, processes, or business models that are heavily reliant on the centralization of trust for either competitive advantage, sustainability, or success are all under threat. Those who operate in these spaces need to start strategizing now as to how they will either mitigate the risk blockchain presents or take advantage of the disruptive nature of blockchain to radically simplify their operations.

Ron Quaranta has 25 years of experience in the financial services and technology sectors and currently serves as Chairman of the Wall Street Blockchain Alliance, a non-profit trade advocacy group whose mission is to guide and promote comprehensive adoption of blockchain technology across financial markets.

“My current perspective, based upon Wall Street Blockchain Alliance conversations ... is that regulators are growing more comfortable in their understanding of blockchain or distributed ledger technology over time. They now see the potential opportunity for the technology to make regulatory and compliance reporting more effective for themselves as well as more efficient and cheaper for the financial market participants that they oversee.”

William Mougayar is based in Toronto, is the author of *The Business Blockchain*, and is also known as a Blockchain thought leader and investor.

“The blockchain has fundamental characteristics that puzzle regulators, central authorities and large corporations because it challenges centrally orchestrated trust, and enables a new kind of trust: one that is decentralized and not centrally controlled. A big misconception is that risk increases with decentralized trust. We haven’t proven that to be the case yet. In fact, decentralized technologies can be well traversed, monitored and analyzed, therefore lowering risk. In contrast, the current environment has more risk, because it is full of islands of integrations. Each time you cross from one island to another, you increase risk, because your transactions visibility is lower.”

Equally, industries, processes, or business models that were previously infeasible because of the impossibility of a centrally trusted agency are now viable. Those who are interested in capitalizing on adjacencies for competitive advantage should be actively looking for ways that decentralized trust might extend their business model.

What makes a good or bad use of blockchain?

Despite being a truly innovative technology, blockchain is not a magic bullet. While it offers the ability to decentralize trust, it also has inherent limitations.

Public blockchains’ two biggest limitations revolve around scalability and privacy. Blockchain’s distributed validation model relies heavily on high computational costs. While these increase the barriers against transactional falsification, they also reduce the throughput of the network. Compared to current commercial transactional processing systems, blockchain is orders of magnitude slower. It remains to be seen whether blockchain can be adapted to achieve these levels of scale.

Another key limitation is privacy; because the ledger is shared between every peer, it follows that every peer can in principle see every transaction that has ever taken place. While the chain is pseudonymous and only contains arbitrary identifiers rather than personal details, it is technically feasible to externally link an individual to an address. If an individual were to transfer an asset to someone they were interested in profiling, observing the resulting transaction in the shared ledger would allow them to determine the other individual’s address. And, once determined, they would be able to identify every asset owned by that address.

While there are recommended practices to mitigate this risk such as inserting encrypted

data into blocks, managing addresses through a broader wallet and using one address per asset, the ledger containing blockchain is inherently public. Depending on the use case, this may present an infeasible problem.

Blockchain excels in situations where:

- *multiple individuals need to update a shared database*
- *with transactions that are related to each other*
- *and they either don't know each other, can't trust each other, or don't want to trust each other*

If a shared database is not needed, existing relational databases are still a more effective solution. If a single entity can be responsible for updating the record across organizations, private blockchains may be suitable. Equally, if transactions are all completely independent, there's no longer a need for a single chain; the database could simply be fragmented and cross-validated as needed.

If the above conditions are met, blockchain threatens disruption where the elimination of the central validating agency would create either a cost, efficiency or feasibility advantage. As a new and portable technology, this disruption applies not only to currency and financial services but other markets as well.

In the case of Bitcoin, disintermediation was initially driven by the market desire for a pseudonymous non-centrally controlled currency. As the cryptocurrency gained momentum outside of its original niche users, governments and financial institutions were forced to adapt legislation and services to changing conditions.

Strategically, there are a surprising number of industries and processes that have the potential

to be disrupted due to blockchain. In addition to cryptocurrencies, these include:

Identity validation:

Blockchain can be used to establish webs of trust based on person-to-person identity confirmation. Individuals with validated identities can “share” their trust with people they know. Areas likely to be affected include online applications, citizen control and border management, and credit-related business.

Daryl Wilkinson is the Managing Director of DWC Ltd, a strategy and innovation services company founded by him in 2015 to help businesses and regulators transition to a digital world. He speaks regularly as an authority on digital technology. Daryl is recognised in the European Digital Financial Services ‘Power 50’ as one of the most influential people in digital financial services in Europe and cited as a FinTech100 and CityAM Power Influencer.

“Whilst I’m deeply skeptical about many of the claims made by banks ‘exploring the potential of the Blockchain’ and believe much of what we are reading about is really just good PR and or libertarian excitement, I am curious about the problems we will eventually solve with this technology.

As Strategic Advisor to the FCA, the UK’s regulator, I’m particularly curious about its potential to facilitate more practical and ‘here and now’ problems, like digital identity, which I believe to be one of the main inhibitors to innovation in banking processes. The Blockchain, together with digital vaults and smart contracting, is a very interesting solution to real world problems of proving ones identity and efficiently enabling the activities it is used for thereafter, be that for business or government purposes (e.g. Facilitating access and payments within a welfare system), more efficiently and effectively.

I think the potential for Blockchain to displace thousands of middle and back office intermediaries processing transactions like cross border payments and reconciliations is evident but still some distance from our reality. “

Emerging businesses in this space include BitNation, Onename, and ShoCard.

Decentralized autonomous corporations:

The combination of an inviolable ledger with an autonomous decisioning rule sets or 'smart contracts' and investment capital offers the potential for self-governing corporations involving no direct human control. Being distributed and having eliminated the need for trust between investors, they are incorruptible. Areas likely to be affected include natural monopolies such as telecommunications and public networks, investment funds, and not-for-profits. Emerging businesses in this space include Invictus Innovations, the Nu Network, and Ethereum.

Escrow and digital rights management:

The ability to transfer rights and control between parties can be generalized beyond currency to other digital assets. When combined with private key encryption and distributed file sharing technologies like bittorrent, these platforms might mitigate the risk of losing access to digital assets in the event of a bankruptcy. Areas likely to be affected include content creation and distribution, gaming and bookmaking, and software. Emerging businesses in this space include PlayCoin, ArtPlus, and New System Technologies.

Voting:

The inviolable nature of the blockchain offers the potential to prevent voter fraud. Areas likely to be affected include governmentally-controlled elections and democratic proceedings, boards, and data collection / surveying technologies. Emerging businesses in this space include Follow My Vote and BitCongress.



Alistair Croll has launched five of the world's leading technology conferences; founded and sold technology companies; and written four books on tech and business, including the best-selling *Lean Analytics*. A sought-after speaker, he's delivered keynotes on big data, cloud computing, startup growth, and a variety of other topics across six continents.

"Blockchain is a fairly vague term, because it's been widely associated with cryptocurrencies. But it's an independent thing, powered by the same traceability and distributed trust of currencies as Bitcoin."

"Why is Blockchain so interesting

Blockchain is the DRM the Geeks Like

For decades, technical experts railed against encryption, fearing it would cripple the free flow of information. We learned hard lessons: Sony's proprietary music formats crumbled; Napster undermined music sales. Eventually, Apple removed DRM from the iTunes store.

But this victory was an illusion. The only reason MP3s won as a format was because the Redbook CD-ROM audio format had no copy prevention, a consequence of the Sony-Phillips wars of the eighties. Similarly, the only reason we can rip DVDs is because a DVD player from Xing was poorly secured, allowing the authors of DeCSS to steal the encryption keys and make a software ripper.

The problem was that DRM was about stopping the copying of something, ascribing physical attributes of scarcity to a digital good. There are plenty of good use cases for allowing the trusted sharing of something: Publishing a song, transmitting a medical record, collaborating on a contract. And that's what Blockchain can do.

Things that have opinions about how they're Used

We're entering the era of connected Things. Each of those Things has a memory—the data it records, how it's been used, where it's been deployed. Those things can become nodes on a distributed record, accessed when and where they're needed. But where should that record live?

People are nodes on a distributed record, too. We already have a log of our life, from our vaccinations to our phone usage to our ATM withdrawals to our speeding tickets. Most of us just don't have access

to those records. We have our own metadata, too: wearables, smart thermostats, connected cars and their brethren eat our behavior for breakfast, leaving behind a breadcrumb trail of our lives both online and off.

The paradox of data is that it's most useful when shared widely, but most valuable when guarded closely. Blockchain breaks that paradox. It allows widespread, even global, distribution and verification of information, alongside tight control of how and by whom it's viewed.

Inventing at the Right Time

Humans have a history of inventing technologies when necessity demands them. Search engines let us handle the morass of the Internet; broadcast let us send information to the masses; print let us record and share the growing body of human knowledge; and so on. As we move to a more distributed, yet more connected species—one that is at home in both digital and analog worlds—Blockchain is the next necessary invention. Risk is always about the degree of uncertainty. Most of the time, we think of uncertainty in terms of knowing the future: How likely is a tree to fall, or a boat to sink, or a cancer to spread. But uncertainty happens in the past, as well: Did the claimant actually own the item lost in the fire? Was the car properly maintained?

The true cost of amortizing risk is a function of the two uncertainties. And while prediction, Big Data, and an instrumented world of wearables and services can give us better insight into the likelihood of outcomes, capturing the past in a provable, chain-of-evidence compliant way without placing an undue burden on the customer or the agency is less well solved. That's one of the key advantages that Blockchain technologies offer to those dealing with risk: A true, provable, decentralized record of what actually happened across the life of a policy, an item, or a person."

What should I do now?

Now is the time for Financial Services executives to assess the opportunities and threats that blockchain technologies offer to their business models and develop their strategic responses. To adapt to this emerging disruption, readers should:

Investigate:

Allocate investment funding and form a core team to assess the implications for your business and plan your responses. A useful model for assessing the threats and opportunities to your particular business model is to look at the key problems with the centralized trust model that blockchain helps to overcome and the new entrants competing in these spaces.

Examples include:

- **Fraud:** Firms such as Everledger are transforming the insurance market by using Bitcoin to document ownership and provenance of diamonds and other valuable assets. These services are transforming insurance underwriting and attracting attention on online marketplaces such as eBay that can be used to facilitate insurance fraud or the sale of stolen property
- **Convenience:** The Australian Stock Exchange has initiated a partnership with Digital Asset Holdings to trial a blockchain-powered replacement for its CHESS trade settlement system.

Experiment:

Develop your scope for a limited pilot experiment in one arena of your business to better understand the details of the technology and how it could impact your business processes and your interactions with customers and

suppliers. Use this pilot to explore a thin-slice of your business model using decentralized trust and the appetites for this from your customers and your regulators. Embrace this feedback as you continue to evolve your blockchain engagement strategy.

Collaborate:

Investigate and participate in relevant communities of interest and industry bodies to facilitate learning and lobby for your interests in the rapidly evolving space. Key groups that are emerging as global leaders include

- **R3:** Building a consortium of over 40 global banks as well as leading technology companies such as Microsoft and dozens of other specialist technology firms
- **Wall Street Blockchain Alliance:** Non-Profit Trade Association, aiming to educate finance market professionals and drive forward the adoption of these new technologies to deliver business value in new and unrealized areas.
- **Global Blockchain Forum:** Association to advance and co-coordinate the global policy around decentralized technologies in financial services, launches by the Washington, D.C.-based Chamber of Digital Commerce
- **Hyper ledger:** Open Source project, backed by Linux foundation and IBM, that aims to advance the development of the underpinning blockchain technologies

Many national governments and global bodies such as the IMF have also established discussion groups around this field that provide an opportunity to engage in the debate as it pertains to your field within the Financial Services arena.

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Authors

Evan Stubbs advises leadership on how to make data make a difference, whether it's through developing our next generation workforce, co-creating competitive advantage, building business models, or protecting the underprivileged. He's written three books on using analytics for differentiation and spends most of his time trying to unpack the complexities of blending technology, data, and humanity in ways that work. He serves on a number of boards and is SAS' Chief Analytics Officer for Australia / New Zealand.

Chami Akmeemana is the Managing Director for Global Markets at the Global Risk Institute where he manages the strategy and partnerships across Risk, Financial Technology, Fraud, Anti-Money-Laundering, and Cyber Security. He has a multi-faceted background that includes engineering, law enforcement, entrepreneurship with successful exits, and big data. Chami also serves on a couple of executive boards of start up analytic firms and advises CEOs and start up founders on global markets helping with gap analysis and innovation. A former semi professional rugby player, in his free time, Chami pursues other interests as mentor, researcher/writer, sportsman, as well as volunteering with a number of charities in Australia, Canada, and Sri Lanka.

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Tracy Moore

Consulting leader; assisting organisations to succeed in today's hyper-connected world of exponential change, through focus on the evolution and interaction of human systems and technology solutions. Curious about the space where humanity intersects with intelligent machines - decision theory, future of work, incentive architecture, engagement in knowledge work, empathy in automation etc.