



## The State of the Blockchain Revolution

### Bitcoin was just the beginning of blockchain-driven disruptive innovation.

Many of us are old enough to remember what using the internet was like in 1995: The crackling, hissing and discordant tones of a dial-up modem, followed by long wait times for ugly websites to load. To all appearances, those days are far behind us – yet looks can be deceiving. The internet that has matured so spectacularly over the last 25 years is about to be reborn, and what will replace it is still in nascent form. The technology behind this rebirth is blockchain.

As I wrote in *Blockchain Revolution* (co-authored with Alex Tapscott in 2016), the internet as we have come to know it centres on the sharing of information. Internet 1.0 unlocked incredible value by accelerating and extending data flows. But a system designed to liberate information is not always ideal for protecting valuable assets, like money, votes, intellectual property and personal data. With blockchain, we can trade and move assets through a distributed database that is autonomous and self-policing (i.e. very difficult to hack). Transactions can thus occur without the once-necessary involvement of third parties (e.g. banks and governments) to ensure trust. This capability has transformative implications for business and society. Sectors that are still reeling from relatively recent waves of digital disruption may be upended all over again by blockchain's radical removal of the middleman.

If the profound potential of blockchain is news to you, you're not alone. In recent years, the flashy story of cryptocurrency's rise and fall has stolen much of blockchain's thunder. Distinguishing between the underlying technology (blockchain) and its first "app" (bitcoin) has been a struggle for some. But **the great crypto crash of 2018** might have finally broken bitcoin's grasp on the public imagination. In the meantime, the blockchain revolution is gathering steam. At the **Blockchain Research Institute**, we track exciting developments in a dozen industries, from entertainment and financial services to healthcare and global trade. To be clear, these are not academic experiments or pilot projects but rather systems that are functional and in use.

### Survey of industries

In supply chains, for example, there are some very big things happening. The convoluted trail of documentation required in the logistics industry – such as bills of lading, export licenses and certificates of origin – can share a network state on a blockchain. That means suppliers, purchasers and consumers all have access to identical, unalterable and accurate information about the products' status and origins. In 2016, IBM began working with Walmart and other retailers on a **blockchain-powered solution to enable food traceability** across the entire supply chain. The current system is

designed to identify the origin of any contamination of the food supply, so that users of the system can remove it swiftly.

Similarly, fraudulent or erroneously labelled seafood is rampant, affecting **up to one-third of the market** in such countries as the United States. In such a byzantine seafood supply chain, irregularities easily go undetected. With blockchain, users can illuminate the more obscure corners of the industry.

In healthcare, blockchain is facilitating the shift to a more personalised model of medicine. Patients at Toronto's highly regarded **University Health Network**, Canada's largest research hospital, can opt in to receive a digital identity containing their medical records to take control of their treatment. Adding blockchain would empower patients to create value with their personal data, potentially donating it to further scientific efforts or even selling it.

Finally, the game-changing possibilities for the financial services industry are far beyond crypto. Most companies prefer to avoid the prevailing error-ridden, paper-based process of documentary trade. So banks are rushing to adopt blockchain-based trade finance platforms that are significantly faster, easier and more transparent. The transition to blockchain in trade finance alone **promises to boost banks' annual revenue** by as much as US\$2 billion, according to Bain & Company. Blockchain is likely to forever alter the face of fundraising as well, with tokenisation or digital asset transactions totalling well over US\$10 billion in 2018. Start-ups can now raise money by selling equity shares on the blockchain (incurring relatively miniscule administrative fees), or tokens that token holders can later exchange for products or services once the company is up and running.

### **Blockchain as a force for good**

In addition to guaranteeing that business is conducted according to a single version of the truth that is as complete as possible, blockchain networks can control how agreements between parties are executed, via smart contracts. Assets exchanged through the blockchain can carry their own inviolable terms of use. Smart contracts compel a Goliath to deal as honestly with a David as it would its fellow corporate giants.

The democratisation of legal leverage can work to the benefit of exploited asset owners and creators. Think of Uber drivers and others in the so-called "sharing economy" whose earnings have been **sliced to the bone** by aggregator apps and their algorithms. Smart contracts on the blockchain could one day replace the sharing economy intermediary platforms, thereby ensuring participants are fairly

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compensated for the value they create. Or consider the plight of independent musicians, who must increasingly **live on the road** to make ends meet now that album sales have dried up industry-wide. Singer-songwriter Imogen Heap is the force behind **Creative Passport**, a database for musicians that, among other things, uses smart contracts to circumvent industry barriers that come between artists and their rightful revenue.

With an assist from the Internet of Things, automated transactions on the blockchain can transform our wasteful relationship with energy. **Power Ledger**, an Australian company that won an **Enterprise Blockchain Award** for innovative entrepreneurship, offers a decentralised peer-to-peer energy market. It promotes not only the use of renewables but also more efficient distribution of energy across the grid.

Last, but not least, blockchain may help revive the legitimacy of democracy itself. Why do we still have to queue up, often for hours, at a physical polling place to cast our ballot on Election Day? Increasing ease of voting through digital access would bring untold numbers of citizens, especially young people, into the democratic fold. But a fully virtual system could not win public trust without the cutting-edge cryptography of blockchain to prevent cyber-interference. Moreover, we could engineer votes as smart contracts, obliging winning candidates to act on the promises and platform on which they campaigned. In this way, decentralised voting could help reinforce the principles of representative democracy.

### **Barriers to adoption**

While the blockchain revolution is going strong, there are formidable obstacles to wider adoption that mostly stem from the disruptive nature of the technology. Not surprisingly, many established players recognise that blockchain represents a direct threat to their business model and are handling it gingerly.

However, as with any innovative technology, the brave early adopters will capture the most value. INSEAD's new online course "**Blockchain Revolution for the Enterprise**", taught by Alex Tapscott and me, provides a comprehensive orientation on blockchain and its strategic uses for organisations of all shapes and sizes – no knowledge of coding required. Now is the perfect moment for a course like this, because the blockchain train is still gathering speed. Those who drag their heels for much longer, however, may find themselves left behind.

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