

## The Impact of Blockchain

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It's not an understatement to say that blockchain is probably the most disruptive technology in the modern digital economy. It may also be the most controversial. As the most transformative technology in recent history, blockchain will both enable new industry applications and modernize many antiquated ones. While centralized, highly available systems—from mainframe to modern public or private cloud—power the world's institutions and have proven able to cope with millions of transactions, blockchain offers an alternate future. With it comes the promise of decentralization, which raises hopes of democratization and stokes the fears of many monopolized institutions.



Next-generation blockchain is potentially a viable platform for security, artificial intelligence, predictive analytics, e-government, and IoT, among many other applications. We can become particularly enamored of new technologies, seeing in them unlimited possibility when in fact there are very real limits. Take AI, for example. While it has gained substantial momentum in recent months, to some—especially some machine learning experts—the potential is overhyped. Consider machine learning vs. the human mind. In 1997, IBM Deep Blue could beat Garry Kasparov in chess, but only after a long period of training. And yet, its skills were not transferable, as are those of humans: Deep Blue could not play poker, but we can. By comparison, blockchain can disrupt many of the aforementioned sectors today by combining a powerful, secure distributed ledger with machine learning and AI systems for control and auditability. In addition, one of the most critical issues of our era is data governance, control, and sharing by the respective individuals; and this is one of the most promising applications of blockchain technology.

Blockchain's ascent has been fueled by the meteoric rise of Bitcoin in the last two years. When Bitcoin hit a frenzied high of over \$16,000 in November 2017, blockchain was the hottest of hot topics at conferences worldwide. In the time since, both Bitcoin and blockchain technology have gone through the typical technology adoption lifecycle. The mania has settled down somewhat, though these technologies are certainly here to stay. While many companies are certainly still watching intently the trends on blockchain, a handful of startups in different industries are moving towards tokenization of their respective domains. They are doing so for good reason: many early startup companies managed to secure funding in ICO (Initial Coin Offering) by means of being a "utility token" provider. This digital token of cryptocurrency is issued to fund development of the cryptocurrency and can be later used to purchase a good or service offered by the issuer of the cryptocurrency. In this way, tokens enable fundraising for the startup. The initial cost of entry was fairly low, requiring only a sophisticated whitepaper to secure an ICO.

If this sounds too good to be true, it is. As more and more startups failed to deliver on their promises, the tokenized economy experienced its first setbacks. While some governments stopped the ICO altogether, others took the initiative to support the cryptoeconomy. Gibraltar and Malta are still considered safe haven for the cryptoeconomy. Singapore allows payment with Luna and some coffeeshops in the country accept crypto-payment.

It shouldn't come as a surprise that cryptocurrencies in general are subject to increasing government scrutiny and control. They pose a threat to traditional systems in many industries. The most giant and vulnerable among these may be the worldwide banking system. Yet, even here, an element of 'if you can't beat 'em, join 'em' is creeping in. Some institutions are experimenting with different versions of cryptocurrencies. Understanding the volatility of some of the cryptocurrencies, some institutions started to use Ripple, which is currently in use with companies such

as [UniCredit](#), [UBS](#) and [Santander](#). It has been increasingly adopted by banks and [payment networks](#) as settlement infrastructure technology, with [American Banker](#) explaining that “from [the] banks’ perspective, distributed ledgers like the Ripple system have a number of advantages over cryptocurrencies like [Bitcoin](#) and Ethereum.” Many cryptocurrency experts see the volatility of crypto in institutions which will most likely lose the biggest power, mainly governments as well as big banks.

Banking and the cryptoeconomy show just one particular application of blockchain technology. It is also driving many PoCs and powerful applications in cybersecurity, supply chain management (including provenance, fluent, skuchain), forecasting (angur), insurance, private transport (arcade city, la´zooz), cloud storage (storj), charity (bitgive), public benefits (govcoin), healthcare (gem, tierion), energy management (transactivegrid), online music (mycelia), retail (OpenBazaar), and real estate (ubitquity), to name a few.

Blockchain technology is also entering the telecom space, where many service providers are starting to experiment with it. IBM and Telefónica are working to use blockchain technology as part of the operator’s service delivery platform. This includes handling register data and information from different sources for business and network processes. The collaboration will initially use IBM’s Blockchain Platform to improve reliability and transparency of information collected by different networks when routing international calls. Operators involved in the routing of those calls will have permissioned access to a decentralized platform housing that information. That will provide access to real-time tracing of calls to allow for correct billing processes between operators. In the APAC region, LG Uplus, Etisalat Group, KT, Telefónica and PLDT have joined together to create a Carrier Blockchain Study Group (CBSG) as part of an initiative to develop telecom-specific blockchain initiatives.

And these efforts are just the beginning. According to the [“Blockchain in Telecom Market by Provider, Application, Organization Size and Region – Global Forecast to 2023”](#) report, the blockchain in telecom market size is expected to grow from \$46.6 million in 2018 to \$993.8 million by 2023, at a Compound Annual Growth Rate (CAGR) of 84.4 percent during the forecast period. The blockchain in telecom market is driven by various factors, such as the increasing support for OSS/BSS processes and rising security concerns among telcos.

One of the biggest use cases of blockchain concerns real-time invoicing, digital settlement, and the use of crypto for instant payment. Some of the biggest installations of today’s Business Support System (BSS) are heavy applications and require massive implementation effort. BSS is concerned with product management, customer management, revenue management and order management. If we narrow our focus to just revenue management, BSS’s scope includes billing, charging and settlement. It can handle any combination of OSS (Operation Support Systems) services, products and offers of vertical and physical assets. BSS revenue management supports OSS order provisioning and often partner settlement. Billing is an integral function offered by BSS systems and is not under the purview of OSS. This situation presents the lowest-hanging fruit for the use of blockchain and smart contracts. Blockchain facilitates the collaboration of partners who might not otherwise trust each other in permission-based (closed) mode. In the traditional invoice settlement, a preconfigured rating engine has to run over millions of CDR (Call Detail Records) in order to produce monthly billing. That monthly billing data is then sent to customers or charged electronically. With blockchain-based BSS, customers can be charged immediately for services they have used. The crypto settlement is not limited to telecom services; it will be part of a bigger vision to disrupt the settlement process across multiple industries.

Another use case for blockchain in telecom is “secure mobile device management and fraud prevention.” Smartphone theft is a big industry; with well over 2 million phones stolen each year, and stolen or lost phones costing American consumers approximately \$30 billion annually. Because of this, there is a big market for consumer security and the ability to identify all active mobile devices on the public telecommunications networks—and isolate illegal mobile devices from mobile operators. Some of the stolen devices are imported or exported into different countries and easily move globally. Blockchain technology will allow worldwide telecom operators to securely track those devices and block them on their networks. A global permission-based blockchain network will help carriers to create and maintain white and blacklist and minimize the possible grey market.

Another huge area of concern for consumers today is data privacy. According to a recent [PWC USA report](#), 69 percent of consumers believe companies are vulnerable to hacks and cyberattacks, only 25 percent of consumers believe most companies handle their sensitive personal data responsibly, just 10 percent of consumers feel they have complete control over their personal information, and 72 percent of consumers believe businesses, not the government, are best equipped to protect them. A recent survey by [Jebbit](#), conducted in July 2018, found that consumers' trust in Facebook is eroding rapidly.

Consumers' concern for data security has huge implications for telcos. This is because consumers must trust telcos with their most sensitive data. Without trust between consumers and service providers, there is no common ground for privacy in this digital world, especially when those companies use personal data in ways consumers were not expecting. This is one of the reason why Facebook's participation in the Telco Intra Project (TIP) and their OpenRAN has raised some eyebrows among experts in telecom data and security. Enter blockchain, though: it can enable companies to share responsibility for and show an interest in minimizing risk as a way to gain back customer trust. In upcoming versions of the blockchain platform, data governance plays a major role.

Of course, amid all the promise, blockchain brings with it areas for concern, too. These include the authenticity of users as well as the uncertainty regulatory status and the lack of common standards in blockchain. These latter concerns could certainly hinder the growth of the market. Other areas of concern include scalability, adaption period, and the interoperability of various blockchain platforms. Finally, the lack of awareness of blockchain technology and the lack of understanding about the concept and the skill sets it will require are additional barriers to overcome. Yet, the promise the technology offers to persistent current problems may outweigh the challenges it will introduce and companies like [Ziotis](#) are hear to help customers along their blockchain journey.