

NICHOLAS INVESTMENT PARTNERS

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Investment Insights: Blockchain Technology: Looking Beyond Bitcoin

As early investors in so many of the new, dynamically growing companies with technologies and services that have transformed our lives across so many industries, we are well aware of the opportunities—and disruption—created by transformative innovation.

Blockchain technology reminds me of the early days of the internet, the “dot-com era.” It holds lots of promise, but today has many competing protocols and applications as well as rampant speculation.

Bitcoin was the subject of a term paper a student mentee of mine wrote as an undergraduate at a college here in San Diego four years ago. He recently informed me that he has “retired” after cashing in the gains he made in Bitcoin and Ethereum, two of the largest cryptocurrencies built on blockchain technology.

Stories like these have captured the public imagination, yet we believe that this revolutionary technology creates many opportunities beyond Bitcoin and other cryptocurrencies for long-term investors in growing companies like us. We seek to invest in dynamic companies that are capitalizing on positive change to produce sustainable revenue and/or earnings growth that is not yet fully recognized by the market.

The Benefits of Blockchain Technology

This innovative technology enables data and transactions to be more quickly and securely distributed. Significantly, it creates one single immutable record, one shared ledger among parties and, therefore, one source of the truth, removing the middleman. Imagine the operating efficiencies. Smart contracts can be automatically executed when certain conditions are met, which leads to less waste, less charge backs and less debate among counterparties. Thus, blockchain technology is faster and more secure than existing legacy systems used for payments, recording transactions and all kinds of data tracking.

Blockchain technology is a digital ledger composed of a continuous and growing chain of unique encrypted “blocks” distributed among a peer-to-peer network of computers, each called a “node”. These blocks containing transaction information, data records or other digitized content cannot be altered. They are encrypted, connected to past and future blocks in the chain, and there must be a consensus among nodes to update the chain of blocks, or a “blockchain”, as it is increasingly becoming known as.

A blockchain resides on distributed, fault tolerant and massively parallel enterprise systems. The excess redundancy of nodes creates a trustworthy, secure and reliable system, even among unknown and, perhaps, untrustworthy players. Due to the system architecture, one can trust the data even if one does not trust or know all the actors. In effect, a blockchain is secured by the entropy of resources (computational horsepower) and complex cryptographic algorithms (more math heavy than internet protocols).

Existing Innovation and New Developments

The commercial applications of blockchain technology are just starting. Shifting recordkeeping to blockchain technology has the potential to create significant efficiencies and reduce costs for companies in many industries. This could transform banking and custody, energy, utilities, transportation, pharmaceutical sales and distribution, real estate (title and escrow), legal (smart contracts), remittances, supply chain management, travel and leisure, and more.



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Benefits

Blockchain is more efficient, faster and more secure than existing legacy systems used for payments, transactions, data tracking, etc.

Reduce Expenses

Blockchain technology could save financial institutions up to 70% in reporting costs, 50% in compliance and on-boarding costs, and 30% in infrastructure costs reducing operating expenses for the 10 largest global investment banks by \$8-\$12 billion.

Ramp Up in Spending

Blockchain spending is estimated to grow from \$226 million in 2016 to more than \$1 billion in 2020 and over \$5 billion by 2023.



As an example of the potential positive impact, Accenture estimates that blockchain technologies could save financial institutions up to 70% in reporting costs, 50% in compliance and on-boarding costs, and 30% in infrastructure costs, which would reduce operating expenses for the 10 largest global investment banks by \$8 to \$12 billion.

By the end of 2018, the Depository Trust & Clearing Corporation (DTCC) that provides post-trade clearing and settlement services is targeting to replace their legacy warehouse system so that the entire \$11 trillion global market for credit-default swaps will settle using a blockchain.

Many companies are joining together to create economies of scale through new blockchain consortia. Deloitte's research estimates that there are more than 40 blockchain consortia. Most were put together in the last six months. Initially, most of these consortia were in financial services. New entrants are in logistics, gaming and healthcare. See Exhibit 1 for examples of the largest consortia, demonstrating their potentially far-reaching impact and major backers.

Pooling of resources on a shared blockchain makes sense since its value and security is increased with more users, more nodes. The increasing size of these consortia as well as the creation of new ones will drive even more development of blockchain applications. Similar to what TCP/IP did for the internet or the Apple App Store did for software development, this collaboration in developing a common system will help spur further applications and innovation.

Promising Investment Candidates

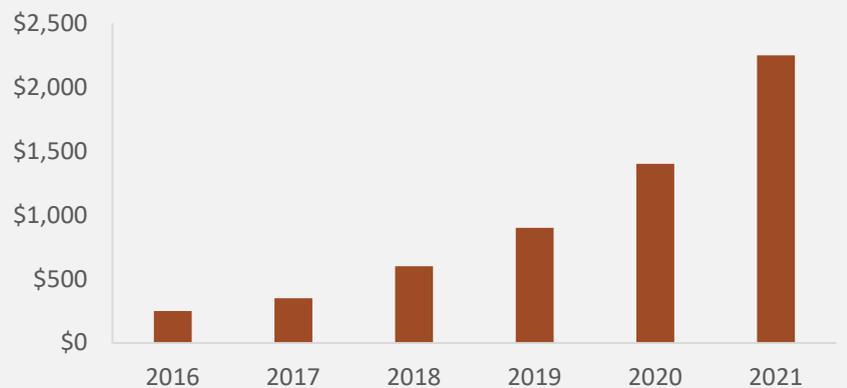
We are closely monitoring the network effects of the best blockchain projects. Early leaders in protocol design have the advantage of attracting more developers. We believe that enterprise software vendors are well positioned to profit from increased spending on the development and integration of this innovative technology into companies and industries across the economy. As shown in Exhibit 2, Gartner Group estimates spending on blockchain technologies will grow exponentially over the next 3 to 5 years.

Exhibit 1: Major Blockchain Consortia

	TYPE	PARTICIPANTS AND BACKERS
	Utilizes Ethereum blockchain to address interests in banking, management, consulting, automotive, pharmaceuticals, etc.	200+ members with backing from major academic and financial institutions as well as tech companies like Microsoft etc.
	Open source collaboration	Initially started by Linux Foundation and now has over 142 members
	Digital asset platform used by banks, dealers, exchanges, custodians and clearing house clients	Backed by JP Morgan, Goldman Sachs, ABN AMRO, BNP Paribas, IBM, Deutsche Borse, etc.
	Payments with integration for corporate disbursements and retail remittances	90+ members with backing from Santander Innoventures, Standard Chartered Bank, Accenture, Digital Currency Group, etc.
	Cross-industry collaboration that standardize distributed ledger technology primarily in the freight industry	200+ members with backing by BNSF Railway, FedEx, UPS, China's JD.com, etc. Recently teamed with Wall Street Blockchain Alliance

Source: Company data, Nicholas Investment Partners

Exhibit 2: Blockchain Spending



Actual/Projected Investment Growth (\$ millions) as of December 6, 2017. Source: Gartner, Robert W. Baird

Sources:

Accenture: Banking on Blockchain report issued in January 2017, <https://www.accenture.com/us-en/insight-banking-on-blockchain>

Deloitte: Banding Together for Blockchain article in August 2017, <https://www2.deloitte.com/insights/us/en/focus/signals-for-strategists/emergence-of-blockchain-consortia.html>

Many of our investments are focused on those leading the charge in developing blockchain technology solutions for their customers.

Our research suggests that the strongest investment candidates developing and implementing blockchain technology have some or all of the following attributes:

- Database structure or software writing to a database with shared write access, e.g., nearly all enterprise software
- Shared write access where some writers are unknown to others e.g., shared access supply chain software
- Expertise in virtual machine software, artificial intelligence, machine learning, open source languages and blockchain technology
- Code that is agile, formed in reusable blocks with thin, small, simple software footprints, open source and container based
- Ability to organize distributed software apps or programmers since teams themselves are likely to become more geographically distributed

We have sought from a bottom-up perspective to identify companies that fit these criteria while also having strong current fundamentals, a positive earnings outlook, and sustainable revenue and or earnings growth, and where the stock offers an attractive risk/reward and timely investment sentiment.

This is a very exciting time to be an investor in technology. Blockchain technology has all the hallmarks of a blockbuster like the internet when I started my career as an analyst 22 years ago. Thankfully, its benefits are widely distributed across the capitalization spectrum, including many small- and mid-cap stocks. It is striking—as it was then and is now—how young most of the speakers are at conferences featuring blockchain technology. I stand out not only as a woman, but also as one of the few over 40 years old. One of the major benefits of mentoring college students over the last 10 years has been staying in tune with the latest technology and learning about the innovation they are helping to create that has the potential to make a better world for us all.

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ABOUT US

Nicholas Investment Partners, L.P. is an independent, employee-owned and majority women-owned investment boutique focused on investing in dynamic, less efficient markets such as US small- and mid-cap equities and convertible bonds. We believe that change creates opportunity. We invest in dynamic companies with accelerating revenue and/or earnings growth in which our research confirms the company’s growth is sustainable and the company’s stock is a timely investment. Our edge comes from combining fundamental equity and credit research with the objectivity and efficiency of quantitative analytics. We have a results-driven and client-centric culture centered on building lasting and value-added relationships with a select group of institutional and private wealth clients and consultants.