

Disruptive Innovation Spotlight

February 2021

Each quarter we highlight an investment theme from the Disruptive Innovation Strategy, focusing on the megatrends driving disruption and the companies we believe are best positioned to capitalize. Companies mentioned in this series should not be perceived as specific stock recommendations.



What's Next in Disruptive Innovation?

Introduction

At the start of the pandemic last spring, we noted that economic shocks often accelerate disruptive innovation.¹ In less than a year's time, three companies we wrote about, Teladoc, Netflix and Slack, have grown to levels we thought would take years to achieve.² While the pandemic has accelerated the *adoption* of these digital businesses, it is important to recognize that all three depend on underlying technologies that are fairly mature, such as the World Wide Web, video conferencing and smartphones. The expanded user base and higher revenues coming out of the pandemic sets the stage for the *next* set of technologies to break out, such as artificial intelligence (AI), market-based solutions for sustainability, and blockchain. In this quarter's Disruptive Innovation Spotlight we highlight these three areas and some of the exciting companies in our strategy that are leading the way.

An AI-Driven Future

AI has crossed into the mainstream, helped in large part by support from public cloud vendors like Amazon Web Services (AWS) that offer AI infrastructure on a subscription basis, requiring minimal up-front cost. Fintech companies such as Square and PayPal use AI for credit scoring and risk mitigation, while leading edge retailers including Stitch Fix, Amazon, Alibaba and Sea Limited use it to make intelligent purchase recommendations, much like Netflix uses it to make the perfect movie recommendation.

¹ [Investment Spotlight - Special Edition](#)

² Teladoc has seen virtual doctor visits surge from 4.1 million at the end of 2019 to an estimated 10.6 million in 2020; Netflix recently topped 200 million subscribers making it the world's largest subscription streaming service; and Slack has accepted an offer by Salesforce.com (at a 54% premium) to serve as the communications layer for its vision of a modern digital enterprise.

Fundamental breakthroughs in AI that are happening today will soon have major implications for the transportation and healthcare industries. Uber, for example, has recently published research in the field of Generative Adversarial Networks (GAN)³ to predict traffic flows for self-driving cars, while Tesla has been collecting on-road data to train its machine learning models since 2016. The company plans to offer “full-self-driving” options later this year, based on its trained AI models and proprietary silicon chips. In the field of biology, Google’s DeepMind recently conquered a 50-year old grand challenge known as the “protein-folding problem” to predict the sequence of amino acids in complex proteins.⁴ Understanding protein structure is key to understanding their function, giving companies like global biotech innovator, Vertex Pharmaceuticals, the tools it needs to develop gene-based therapies.

Investing in Impact

Government policies focused on the environment such as carbon “cap and trade” schemes, often are ineffective, in part because consumers receive little immediate value from taxing pollution. We have, instead, turned our focus towards a new class of companies whose core founding principle is to have a positive impact on the environment, while offering a differentiated customer experience and maintaining a sharp focus on profitability. Two companies we consider particularly attractive in this light are Tesla Motors and Beyond Meat.

Tesla Motors

Last year proved to be a breakout year for Tesla, with unit sales up 36% YoY to just under 500,000 vehicles, and the new Model 3 being named the best-selling EV in the world by a 3:1 margin.⁵ The environmental benefits of EVs compared to gas-powered vehicles are clear, but to the discerning buyer EVs also offer performance advantages car aficionados crave. For example, Tesla’s latest Model S has been recognized as the *fastest production car ever made*⁶ thanks to its proprietary electric motor and battery technologies. As mentioned earlier, in addition to scaling up production, the company is preparing for the next inflection point in transportation by making its cars ready for autonomous driving. A key pillar of this strategy is to allow owners to contribute to a pool of cars available “on-demand”, either for rental or as part of a robo-taxi fleet, with the ultimate goal of reducing the number of cars on the road.⁷

Beyond Meat

Beyond Meat, much like Tesla, has recognized that the key to achieving its sustainability goals is to offer a differentiated product which appeals to a large market, in this case the \$1.4 trillion global meat industry. As described in a recent Disruptive Innovation Spotlight⁸, the new generation of plant-based proteins from Beyond, Impossible Foods, and Eat Just are designed to appeal to mainstream consumers.

An interesting development took place in December 2020 when Singapore became the first country to approve the sale of chicken meat grown in a lab from cells harvested from a live bird. Rather than use an animal as a bioreactor to grow meat for consumption, San Francisco-based Eat Just uses industrial bioreactors along with a proprietary blend of proteins, amino acids, sugars and other building blocks of real chicken meat. The fascinating story behind this technology was the subject of a recent book titled “Billion Dollar Burger”, in which the founders describe a future where nearly any cut of beef, chicken or *kosher* pork developed using this technology - referred to as “clean meat” - could soon become available.

³ <https://arxiv.org/pdf/2004.06247.pdf>

⁴ <https://deepmind.com/blog/article/alphafold-a-solution-to-a-50-year-old-grand-challenge-in-biology>

⁵ <https://www.statista.com/statistics/960121/sales-of-all-electric-vehicles-worldwide-by-model/>

⁶ <https://www.bloomberg.com/news/articles/2021-01-27/tesla-says-model-s-plaid-is-fastest-accelerating-production-car>

⁷ Today the utilization of most cars is 5% since they sit idle most of the time. But as a pooled resource, EVs could be pushed to 60-70% utilization, replacing a larger number of underutilized gas-powered cars for the same number of passenger miles.

⁸ [Disruptive Innovation Spotlight - Alternative Proteins](#)

Blockchain

Blockchain is the accounting system used by cryptocurrencies, including Bitcoin, but its unique characteristics make it a potentially disruptive technological force in many industries. To understand the role of blockchain, consider, for example, that in a credit card transaction, a trusted intermediary, like Visa or MasterCard, helps reconcile payments made between parties. A “central authority”, such as a bank, debits or credits the ledger of the account holder. The distinguishing feature of a blockchain is that there is no trust required of a payment network or fees to be paid, and there is no bank involved to debit or credit an account. It is all done “on the blockchain”. The ledger, in blockchain parlance, is “distributed”, meaning that all participants in the network have identical copies. The distributed ledger is also “immutable”, meaning that while new blocks can be added to the blockchain, older blocks can’t be changed. Copies of the ledger are kept in-sync through an ingenious cryptographic feature where participants have an incentive to be the first to broadcast an update to other nodes in the network.

In our view, Bitcoin is not quite ready for prime time, either as a “medium of exchange” or “store of value”, because its volatility is quite high.⁹ But blockchain, as an accounting system, has great potential. We provide two examples below, describing its use in global shipping and as a replacement for currency when supported by a central bank.

Supply Chain Management

The most widely used blockchain today is Ethereum, a cryptocurrency introduced in 2014 by a 20-year old Russian programmer named Vitalik Buterin. Ethereum includes several improvements to Bitcoin, but an important one is a feature called “smart contracts”, which are a pre-arranged set of actions that are triggered once the terms of a smart contract have been satisfied. A simple example would be transfer of a piece of artwork once payment has been verified. The terms of smart contracts are entirely customizable and the core underlying technology is open-source, so it is free to use and alter as needed, making it the natural choice for many private blockchain projects.

One little-known example of a private blockchain is TradeLens, which was established in 2016 by IBM and shipping giant Maersk to bring transparency and efficiency to global supply chains. TradeLens is only open to members of the TradeLens alliance, offering improved transparency into the highly complex process of global trade. It also significantly improves efficiency by reducing the cost of insurance, eliminating manual reconciliation, and freeing up working capital. Through the execution of smart contracts, once pre-arranged conditions are met, funds are automatically transferred. In 2018, IBM announced that Compagnie Maritime d’Affrètement (CMA) and the Mediterranean Shipping Company (MSC) had joined TradeLens, and that soon, half of the world’s ocean container cargo would be on the TradeLens blockchain.¹⁰ Today, TradeLens has over 100 members across the globe, covering 21 industries, recording over 700 million events, and handling 6 million documents on an annual basis.¹¹

Digital Currency Electronic Payment (DCEP)

Today, most of the world’s central banks, including the US Federal Reserve¹², are exploring various ways in which to use digital currencies. The People’s Bank of China (PBoC) arguably has the most ambitious program to replace the nation’s currency with a digital equivalent, in a program called Digital Currency Electronic Payment (DCEP). In their plan, the digital money supply would be controlled by the central bank, put in circulation through commercial banks, and tracked on a private blockchain by its member banks. To consumers in China, who already rely heavily on mobile technology for e-commerce, it would be a seamless transition. For the PBoC, DCEP does many things, including solving the unique problem where Alibaba’s Ant Financial and Tencent’s WeChat Pay have grown to such a scale that they are beginning to

⁹ Bitcoin is actively being considered as an “inflation hedge”, similar to gold, due to the fixed quantity that will ever be produced. While the efficacy of gold as an inflation hedge is debatable, it is clear that since the US went off the gold standard in 1973, it has failed to gain traction among average consumers either as a store of value or medium of exchange.

¹⁰ <https://www.cbronline.com/news/tradelens-data>

¹¹ <https://www.tradelens.com/>

¹² Carapella, Francesca, and Jean Flemming (2020). “Central Bank Digital Currency: A Literature Review,” FEDS

Notes. Washington: Board of Governors of the Federal Reserve System, November 09, 2020, <https://doi.org/10.17016/2380-7172.2790>.

encroach on traditional banking functions, such as payments clearing, deposits and lending. Plans are underway to conduct trials of a DCEP in Beijing, Shenzhen, Hong Kong and other cities, with a major announcement expected around the 2022 Beijing Olympics.

We consider blockchain to be an *enabler of disruption* rather than a technology one can invest in directly, and see many opportunities among the companies in our strategy to embrace it. Square and PayPal, for example, already accept Bitcoin as a payment source. In each case, the crypto-currency is immediately converted to a fiat currency, like US dollars or euros, minimizing their exposure to Bitcoin volatility. While each company generates little profit from the conversion, it expands the use of their digital wallets, disrupting older payment methods like credit cards or cash. Another example is Cloudflare, who offers an Ethereum gateway¹³ developers can use to build distributed applications, or “DApps”, which incorporate smart contracts. While early, DApps based on blockchain hold great potential for things like permission-based electronic healthcare records¹⁴ or social media applications where privacy is a central feature.¹⁵

Conclusion

The advances in technology in the decade leading up to 2020 were remarkable, ranging from the wide availability of cloud computing to using the internet to stream music and videos on demand. After the accelerated adoption witnessed in the past year, we are adjusting our expectations for when today’s emerging technologies might enter the mainstream. AI is quickly becoming a key driver of productivity. The technologies which support autonomous driving are largely in place, and the regulatory environment is conducive. As EV adoption takes hold, self-driving cars are a natural follow-on. In alternative proteins, we appear to have a viable set of products to address the environmental impact of rising protein consumption. With blockchain we have a technology that today is being used to improve global supply chain efficiencies and tomorrow could unleash new levels of innovation in consumer finance and privacy. We are excited.

¹³ <https://blog.cloudflare.com/cloudflare-ethereum-gateway/>

¹⁴ “Using blockchain for Electronic Health Records”, 2019, tinyurl.com/yygrn4og

¹⁵ <https://cointelegraph.com/news/this-blockchain-based-social-media-network-is-the-first-apple-pay-approved-dapp>



THOMAS KRYGOWSKI, PhD, CFA
Managing Director,
Analyst & Portfolio Manager

21 Years of Experience



CHARLES C. KING, CFA
Managing Director,
Chief Investment Officer,
Portfolio Manager

37 Years of Experience



ABOUT 1919

1919 Investment Counsel, LLC (1919ic), an investment management firm, provides discretionary separate account management services for affluent individuals, families, trusts, foundations, endowments, and institutions. As of December 31, 2020 the firm managed approximately \$17.5 billion of assets.

The cornerstone of 1919ic’s investment process is proprietary, fundamental research with an emphasis on quality, risk management and diversification.

WITH OFFICES IN

- Baltimore
- Cincinnati
- Philadelphia
- Birmingham
- New York
- San Francisco
- Vero Beach

Disclaimer

The views expressed are subject to change. Any data cited have been obtained from sources believed to be reliable. The accuracy and completeness of data cannot be guaranteed. Investments held in the Disruptive Innovation Strategy are as of July 2019, and may be reduced or sold at any time without notice at the discretion of the portfolio manager. The information presented should not be considered a recommendation to purchase or sell any security and should not be relied upon as investment advice. It should not be assumed that any purchase or sale decisions will be profitable or will equal the performance of any security mentioned. Past performance is no guarantee of future results.