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The (Heart)Beat Has Sounded: The World Economic Forum Places Blockchain Front and Center

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It's official – Blockchain is ready for its close-up. Blockchain and smart contracts have moved out of the wings and are the new stars of the finance industry, according to the World Economic Forum's report released on Friday, "*The Future of Infrastructure: An Ambitious Look at How Blockchain Can Reshape Financial Services.*"¹

For those of us who have been beating the blockchain and smart contracts drums for months or years, the report was an acknowledgement of what we long have been predicting. Numerous recent studies and reports, including those by major global financial institutions and consulting firms, have been advocating, with increasingly greater confidence, the myriad use cases for blockchain and smart contracts, and certain bulge bracket investment banks, accounting firms and other high-profile organizations have incubators and research arms in full swing.² Venture capital firms, including Andreessen Horowitz, have invested millions of dollars and time in blockchain startups, and credit agency Moody's Investor Services reported in July that, worldwide, approximately 120 ongoing blockchain projects were active, ranging from internal organizational initiatives to intra-industry and start-up collaborations and investments.³

But perhaps no statement has been as powerful as that from Giancarlo Bruno, the World Economic Forum's Head of Financial Services Industries on Friday, when he said, "Rather than to stay at the margins of the finance industry, blockchain will become the beating heart of it."⁴

¹ See "The Future of Financial Infrastructure: An Ambitious Look at How Blockchain Can Reshape Financial Services" (Aug. 12, 2016), <https://www.weforum.org/reports/the-future-of-financial-infrastructure-an-ambitious-look-at-how-blockchain-can-reshape-financial-services/>.

² See, e.g., Glazer, Emily, "JPMorgan Quietly Tests 'Blockchain' With 2,200 Clients" (Feb. 22, 2016), <http://www.wsj.com/articles/one-place-j-p-morgan-is-boosting-spending-fintech-1456172040>; "Blockchain in Capital Markets: The Prize and the Journey" (February 2016), <http://www.oliverwyman.com/content/dam/oliver-wyman/global/en/2016/feb/BlockChain-In-Capital-Markets.pdf>; Kharpal, Arjun, "Barclays Used Blockchain Tech to Trade Derivatives" (Apr. 19, 2016), <http://www.cnbc.com/2016/04/19/barclays-used-blockchain-tech-to-trade-derivatives.html>; "Blockchain Solution Portfolio," <http://www.pwc.com/us/en/financial-services/fintech/blockchain.html>.

³ https://www.moodys.com/research/Moodys-Blockchain-can-bring-benefits-to-the-financial-industry-and-PR_352414?WT.mc_id=AM-RmluYW56ZW4ubmV0X1JTQl9SYXRpbmdzX05ld3NfTm9fVHJhbnNsYXRpb25z~20160721_PR_352414; see, e.g., Redman, Jamie, "Andreessen Horowitz's Recent \$1.5B Round Could Be Big for Bitcoin (June 11, 2016), <https://news.bitcoin.com/horowitz-capital-big-things-bitcoin/>; Feldt, Brian, "Venture Capital Interest in Blockchain Startups on the Rise (May 18, 2016), <http://www.bizjournals.com/stlouis/blog/biznext/2016/05/venture-capital-interest-in-blockchain-startups-on.html>.

⁴ "Blockchain Will Become 'Beating Heart' of the Global Financial System" (Aug. 12, 2016), <https://www.weforum.org/press/2016/08/blockchain-will-become-beating-heart-of-the-global-financial-system/>.

Client Alert

According to the World Economic Forum's report, in the past three years, over US\$1.4 billion has been invested in distributed ledger technology (also known as blockchain), and over 2,500 patents have been filed.⁵ By 2017, it is expected that over 80% of banks will have launched blockchain projects.⁶ In the few days since the report's release, we have been fielding messages from many individuals who previously showed little to no interest in smart contracts and blockchain but who now, awoken by the World Economic Forum's pronouncements, have a lot of catching up to do.

In our next article, we will take an in-depth look at some of the most critical points raised in the World Economic Forum's report. For those of you who are just getting started in blockchain, this article is for you. We will answer two important questions:

1. *What are Blockchain and Smart Contracts?*
2. *Are Blockchain and Smart Contracts Just About FinTech?*

BLOCKCHAIN IS NOT JUST ABOUT FINTECH.

We'll start with the second question, which we get all the time. The answer is a definitive no. Blockchain and smart contracts are not just subsets of FinTech. As we will explain in this article, blockchain is much broader than FinTech or finance in general; blockchain and smart contracts are not merely FinTech verticals. Arguably, FinTech is a use case of blockchain and smart contracts, not the other way around.

BLOCKCHAIN AND SMART CONTRACTS CAN BE UNDERSTOOD WITHOUT HAVING COMPUTER PROGRAMMING SAVVY.

To understand why this is the case, and to provide some examples, we need to describe blockchain and smart contracts in a way that non-programmers can understand:

Blockchain is a disruptive technology that provides a secure, global platform that allows both individuals and enterprises to make and verify – almost instantaneously – a wide variety of transactions.⁷ Blockchain eliminates dependency on a central governmental authority or costly intermediaries, while eliminating the likelihood of manual error and ensuing delays.⁸

Think of a global spreadsheet that is saved and runs on billions of computers around the world, where the data is universally verifiable and trackable. Imagine a series of blocks of information, all interlocking and lined up in

⁵ World Economic Forum, *The Future of Financial Infrastructure: An Ambitious Look at how Blockchain can Reshape Financial Services*, page 14 (August 2016), available at http://www3.weforum.org/docs/WEF_The_future_of_financial_infrastructure.pdf.

⁶ *Id.*

⁷ See, e.g., Kona, Yamini, "Blockchain Technology – The Next Disruptive Computing Innovation" (July 2016), https://magazine.fintechweekly.com/articles/blockchain-technology-the-next-disruptive-computing-innovation?utm_medium=email&utm_source=fintechweeklycom; Schatsky, David and Muraskin, Craig, "Beyond Bitcoin: Blockchain is Coming to Disrupt your Industry" (Dec. 7, 2015), <http://dupress.com/articles/trends-blockchain-bitcoin-security-transparency/>.

⁸ See, e.g., "How Blockchains Could Change the World" (May 2016), <http://www.mckinsey.com/industries/high-tech/our-insights/how-blockchains-could-change-the-world>; Wessel, David, "The Hutchins Center Explains: How Blockchain Could Change the Financial System (Part 1)" (Jan. 11, 2016), <https://www.brookings.edu/2016/01/11/the-hutchins-center-explains-how-blockchain-could-change-the-financial-system-part-1/>.

Client Alert

chronological order, with security features that prevent the ability to tamper with past information. Blockchain can be seen as the second generation of the Internet, i.e., a new peer-to-peer protocol, or as many experts have described it: a “digital distributed ledger” or “the trust machine.”⁹

Blockchain has the potential to disrupt today’s big disrupters and transform nearly all industries, particularly those that rely on trusted intermediaries (clearinghouses, custodians, exchanges and fiduciaries) or that require central governmental authorities.

Blockchain technology presents opportunities with respect to virtually anything of value that requires trust and would benefit from tracking.¹⁰ Think identity cards, birth certificates, financial transactions, real estate deeds, voting ballots, food provenance, intellectual property protection (including music) and so on.

SMART CONTRACTS OVERLAY AND INTERACT WITH THE BLOCKCHAIN.

Smart contracts can be envisioned as “overlying” the blockchain base and provide the ability to virtually verify or enforce contracts once particular conditions are met. Smart contracts are protocols written using computer code, which can be stored on blockchain, and parties to a particular contract can specify the terms and conditions thereof.¹¹ When the required conditions have been met, such as delivery of a product or service, a particular specified outcome will occur, such as the making of a payment, or vice-versa. In the same way that a vending machine vends once change has been deposited, smart contracts can allow title to assets to move upon the occurrence of certain events. Data platforms, also referred to as “data oracles,” also can be used to collect information and gather facts from the world beyond the blockchain, allowing smart contracts to determine whether the specified conditions have been met.¹² In the finance space, a data oracle could, for example, verify LIBOR from a trusted source, instantaneously and accurately.

CROSS-INDUSTRY USE CASES ABOUND.

Below are a few potential cross-industry use cases for blockchain. This list is intended to be illustrative and is not an exhaustive list of blockchain and smart contracts possibilities.

⁹ See, e.g., UK Government Chief Scientific Adviser, *Distributed Ledger Technology: Beyond Block Chain* (2016), available at https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/492972/qs-16-1-distributed-ledger-technology.pdf; “The Trust Machine: The Promise of the Blockchain” (Oct. 31, 2015), <http://www.economist.com/news/leaders/21677198-technology-behind-bitcoin-could-transform-how-economy-works-trust-machine>.

¹⁰ See, e.g., <https://followmyvote.com/> (using blockchain to track voting); <http://www.everledger.io/> (using blockchain to track diamonds); Mizrahi, Alex, “A Blockchain Based Property Ownership Recording System,” <http://chromaway.com/papers/A-blockchain-based-property-registry.pdf> (discussing uses of blockchain to track high-value property).

¹¹ See, e.g., “A Gentle Introduction to Smart Contracts” (Feb. 1, 2016), <https://bitsonblocks.net/2016/02/01/a-gentle-introduction-to-smart-contracts/>; Stark, John, “Making Sense of Blockchain Smart Contracts” (June 4, 2016), <http://www.coindesk.com/making-sense-smart-contracts/>.

¹² See, e.g., “Connect Your Smart Contract to the Data Feeds, Internal IT and Payment Methods They Require,” Smart Contract Oracles, <http://about.smartcontract.com/>.

Client Alert

Banking and Securities

The Economist has estimated that banks charged nearly \$1.7 trillion to process payments in 2014¹³ – to put it into perspective, that is about 2% of the entire world economy.¹⁴ By utilizing blockchain and smart contracts, those costs could be reduced drastically by providing the ability to send money just like sending an email, without being charged by any intermediaries and with significantly fewer opportunities for manual error.¹⁵

Importantly, a recent study suggests that up to 10% of securities trades are subject to errors.¹⁶ Industry experts expect to use blockchain to minimize, and perhaps eliminate, the inefficiencies related to trading, so that clearing and settling may occur on the same day, as opposed to the current two- to three-day process.¹⁷

The State of Delaware, home to most U.S. venture capital firms and startups and the great majority of U.S. Fortune 500 companies, announced this spring its own blockchain initiative.¹⁸ Among other things, Delaware's initiative is supportive of legislation to enable companies to distribute corporate share ownership through blockchain.¹⁹ In other words, instead of stock certificates, shares in a corporation would take the form of smart contracts, or protocols that mimic the functions of shares and are self-executing.²⁰ Given that the vast majority of U.S. companies that undergo an IPO choose to incorporate in Delaware,²¹ the next big U.S. IPO very well may be executed on blockchain.

¹³ "High Tech Meets Low Finance" (Mar. 12, 2016), <http://www.economist.com/news/finance-and-economics/21694531-all-money-spent-technology-banking-not-efficient-high-tech-meets-low>.

¹⁴ See World Development Indicators Database, World Bank (July 22, 2016), <http://databank.worldbank.org/data/download/GDP.pdf> (providing the combined global GDP for 2015).

¹⁵ See "Blockchain Wallet FAQ," <https://blockchain.info/wallet/wallet-faq> (explaining how blockchain technology enables completing bitcoin transactions easily via an email-like platform).

¹⁶ See Williams-Grut, Oscar, "Goldman Sachs: 5 Practical Uses for Blockchain – from Airbnb to Stock Markets" (May 28, 2016), <http://www.businessinsider.com/goldman-blockchain-beyond-the-hype-practical-uses-2016-5/#sharing-economy-building-trust-on-platforms-like-airbnb-1> (discussing Goldman Sachs report).

¹⁷ See, e.g., Hope, Bradley and Casey, Michael J., "A Bitcoin Technology Gets NASDAQ Test" (May 10, 2015), <http://www.wsj.com/articles/a-bitcoin-technology-gets-nasdaq-test-1431296886>; Lee, Adrian and Hong, KiHoon, "How Blockchain Tech Is About to Transform Sharemarket Trading" (Feb. 7, 2016), <http://www.coindesk.com/how-blockchain-technology-is-about-to-transform-sharemarket-trading/>; "High Tech Meets Low Finance" (Mar. 12, 2016), <http://www.economist.com/news/finance-and-economics/21694531-all-money-spent-technology-banking-not-efficient-high-tech-meets-low>.

¹⁸ See, e.g., "Governor Markell Launches Delaware Blockchain Initiative (May 2, 2016), <http://www.prnewswire.com/news-releases/governor-markell-launches-delaware-blockchain-initiative-300260672.html>; McParland, Tom, "Delaware Launches New Blockchain Initiative for Businesses" (May 11, 2016), <http://www.delawarelawweekly.com/id=1202757298572/Delaware-Launches-New-Blockchain-Initiative-for-Businesses?slreturn=20160716180105>.

¹⁹ See, e.g., Hintze, John, "Delaware's Welcome Mat for the Blockchain" (May 20, 2016), <http://www.garp.org/#!/risk-intelligence/detail/a1Z400000034FOFAM/delaware-welcome-mat-blockchain>.

²⁰ See, e.g., Higgins, Stan, "Delaware to Seek Legal Classification for Blockchain Shares" (May 2, 2016), <http://www.coindesk.com/delaware-government-blockchain-shares/>.

²¹ See Bullock, Jeffrey W., *Delaware Division of Corporations 2014 Annual Report*, available at http://corp.delaware.gov/Corporations_2014%20Annual%20Report.pdf (stating that almost 89 percent of U.S. initial public offerings in 2014 chose to incorporate in Delaware).

Client Alert

Identity Verification

Imagine being able to verify the identity of anyone you deal with online. Identity, once recorded on blockchain, would not be able to be deleted or modified, due to the chronological aspects of the interlocking blockchain records, which provides significant immunity from tampering.²² Companies that operate peer-to-peer lodging marketplaces could benefit from blockchain by reducing guests' safety concerns and hosts' property damage worries.

Excess Electricity Sales

As an alternative to central power providers, individuals able to generate their own electricity, for example, via rooftop solar panels, easily could sell (to other end-users) excess power via blockchain without requiring intermediaries.²³

Real Estate

Real estate is another industry that is expected to benefit from the use of blockchain, by eliminating the information asymmetry present in many real estate transactions.²⁴ In addition to instantaneously verifying the identity of buyers and sellers, by using blockchain, digital IDs could be created for real estate assets, making both the mortgage loan process and the transfer of ownership seamless.

Supply Chain Tracking & Food Authentication

Blockchain also can provide supply chain transparency, enabling, among other things, verification of the origin and authenticity of food. Think of all of the "made in Italy" products. How can consumers be certain that their favorite bottle of wine or their favorite cheese really hails from the advertised locale? Start-ups all over the world are devising new ways to use information recorded on blockchain in order to track particular food items along their journeys from, for instance, a farm on the Amalfi Coast to a fine restaurant in San Francisco.²⁵

²² See, e.g., Dillet, Romain, "ShoCard is a Digital Identity Card on the Blockchain" (May 5, 2015), <https://techcrunch.com/2015/05/05/shocard-is-a-digital-identity-card-on-the-blockchain/>; Young, Joseph, "Russian Payments Company Uses Blockchain to Reduce Financial Fraud" (Jan. 21, 2016), <https://btcmanager.com/news/business/russian-payments-company-uses-blockchain-to-reduce-financial-fraud/>.

²³ See, e.g., Rutkin, Aviva, "Blockchain-Based Microgrid Gives Power to Consumers in New York" (Mar. 2, 2016), <https://www.newscientist.com/article/2079334-blockchain-based-microgrid-gives-power-to-consumers-in-new-york/>; del Castillo, Michael, "Ethereum Used for 'First' Paid Energy Trade Using Blockchain Tech" (Apr. 11, 2016), <http://www.coindesk.com/ethereum-used-first-paid-energy-trade-using-blockchain-technology/>.

²⁴ See, e.g., Oparah, Don, "3 Ways That the Blockchain Will Change the Real Estate Market" (Feb. 6, 2016), <https://techcrunch.com/2016/02/06/3-ways-that-blockchain-will-change-the-real-estate-market/>; Aarons, Zach, "The Blockchain and the Future of Real Estate Transactions" (July 1, 2015), <http://www.metaprop.org/blog/2015/6/29/the-blockchain-and-the-future-of-real-estate-transactions>.

²⁵ See generally "Building a Better Supply Chain Via the Blockchain" (May 12, 2016), <https://dailyfintech.com/2016/05/12/building-a-better-supply-chain-via-the-blockchain/>; Godsiff, Phil, "Blockchains Could Help Restore Trust in the Food we Choose To Eat" (July 18, 2016), <http://theconversation.com/blockchains-could-help-restore-trust-in-the-food-we-choose-to-eat-62276>; Kharif, Olga, "Blockchain Goes Beyond Crypto-Currency" (May 19, 2016), <http://www.bloomberg.com/news/articles/2016-05-19/built-for-bitcoin-blockchain-goes-beyond-crypto-currency>.

Client Alert

NEXT STEPS

Governments, financial institutions and other asset managers, major global corporations, venture capitalists, consulting and accounting firms, start-ups, not-for-profit organizations, the list goes on...virtually every major player is embracing blockchain and smart contracts technologies and navigating the complex worlds of regulation and legal oversight. The public and private sector opportunities are exciting, and the changes will be disruptive. Potential benefits include inclusive global trade, dramatically reduced costs, delays and inefficiencies and increased transparency.²⁶

In our next article, which will be released later this week, we will examine in detail some of the key take-aways and predictions of the World Economic Forum's report. In the meantime, contact us at Blockchain@MoFo.com with any questions or concerns.

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²⁶ See generally "The Great Chain of Being Sure About Things," (Oct. 31, 2015), <http://www.economist.com/news/briefing/21677228-technology-behind-bitcoin-lets-people-who-do-not-know-or-trust-each-other-build-dependable>; Iyer, Subramanian, "The Benefits of Blockchain Across Industries" (April 2016), <http://www.oracle.com/us/corporate/profit/big-ideas/041316-siyer-2982371.html>; Tapscott, Don and Alex Tapscott, "Here's Why Blockchains Will Change the World" (May 8, 2016), <http://fortune.com/2016/05/08/why-blockchains-will-change-the-world/>.