

Presenting a live 90-minute webinar with interactive Q&A

Emergence of Blockchain: New Applications, Issues and Best Practices for Corporate Counsel

Navigating Choice of Law, Electronic Signatures, Enforceability of Smart Contracts, Money Transfer Licensing, Privacy, AML and More

WEDNESDAY, APRIL 18, 2018

1pm Eastern | 12pm Central | 11am Mountain | 10am Pacific

Today's faculty features:

Richard B. Carroll, Counsel, **Saul Ewing Arnstein & Lehr**, Wilmington, Del.

Olga V. Mack, Vice President of Strategy, **Quantstamp**, San Francisco

Justin S. Wales, **Carlton Fields Jordan Burt**, Miami

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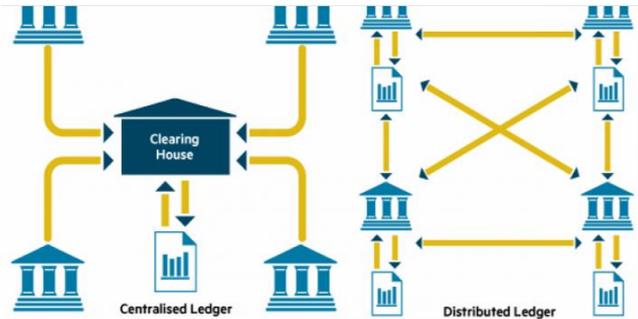
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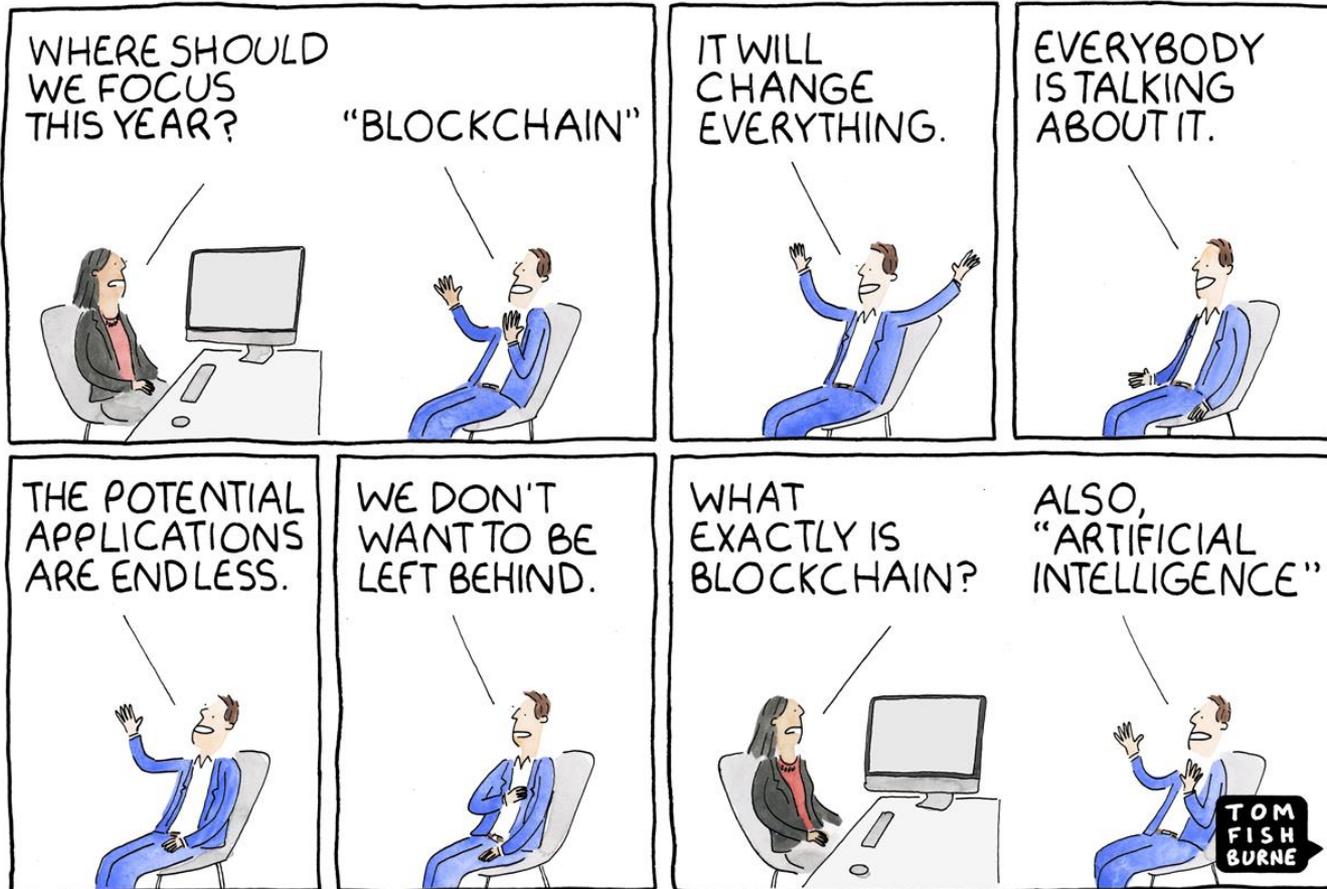
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Blockchain, Distributed Ledger Technology, Cryptocurrency, and ICOs: An Introduction

Rick Carroll
April 18, 2018

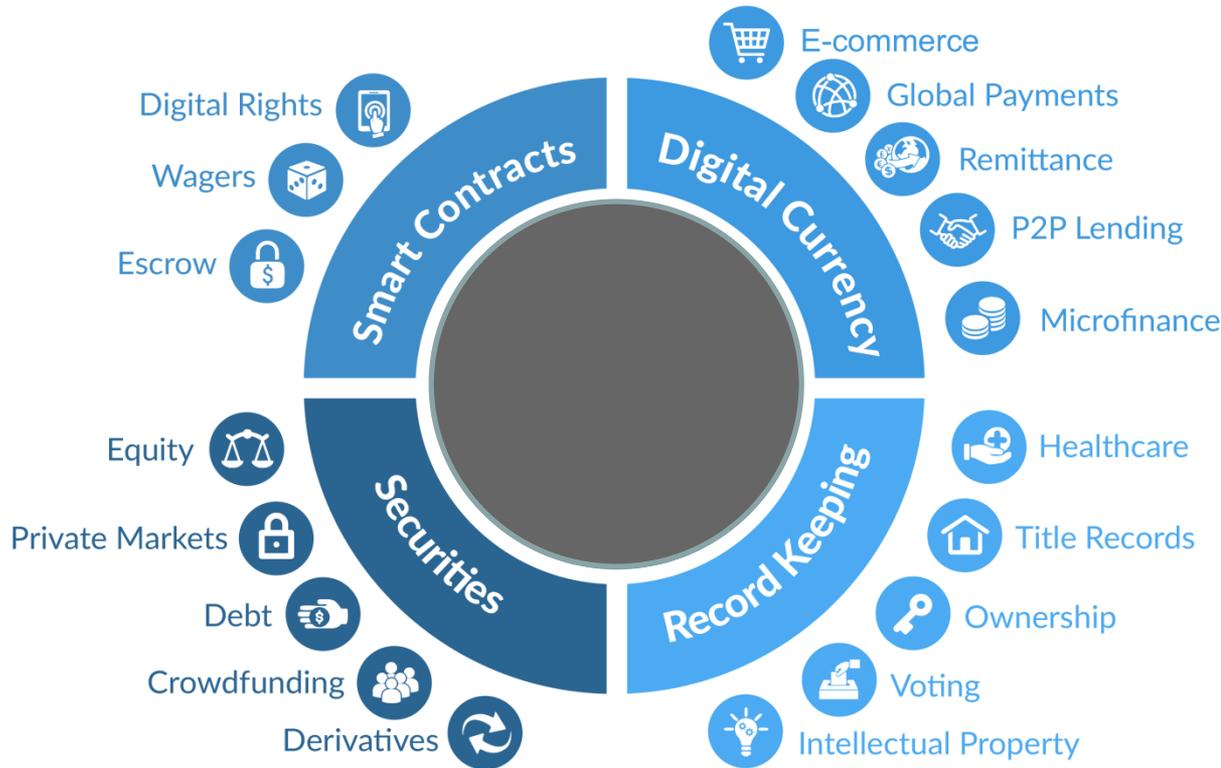
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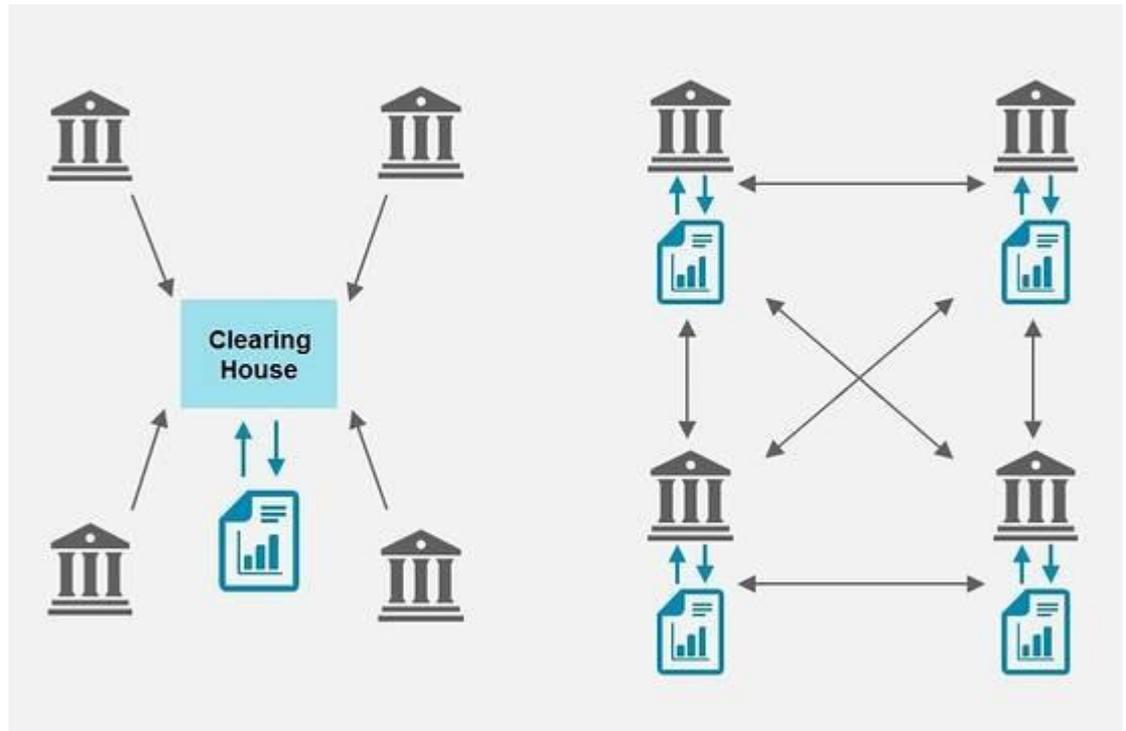
Basics of Blockchain



- Overview
- Origins
- Technology
- Distribution
- Cybersecurity

Overview and Origins

- 2008 Bitcoin
- Distrust of 3rd Party Intermediaries
- Reduction in Fees
- Global Peer-to-Peer Network
- Rapid Transfer of Value



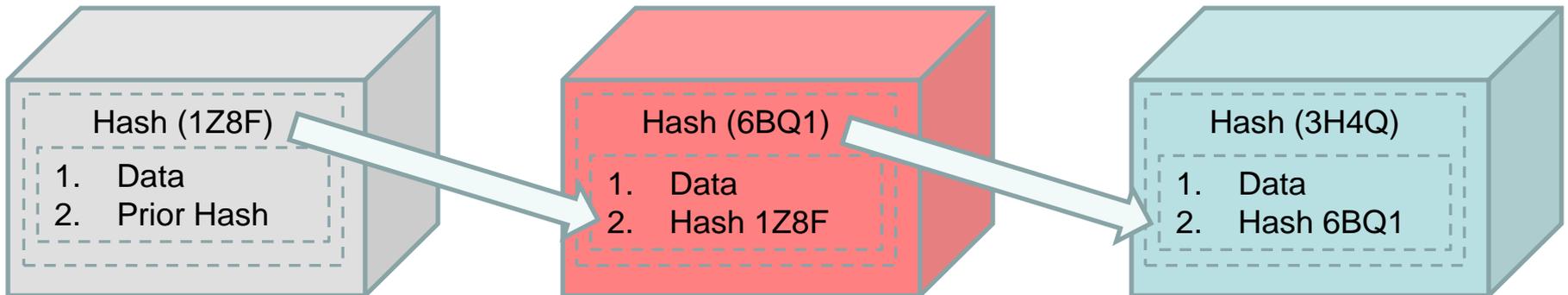
Technology

Block Contents

1. Data (i.e. Transaction)
2. Previous Hash
3. Hash

Verifying New Blocks

1. Nodes
2. Bitcoin Mining
3. Publish



Distribution

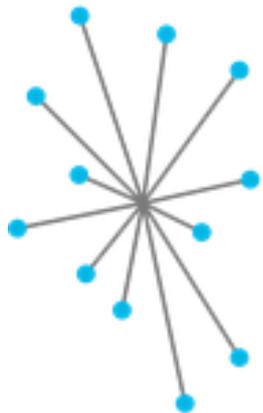
Miners/Verifiers

1. Nodes - Organizations of Individuals
2. Proof-of-Work
3. Add the Block to the Ledger
4. Publish

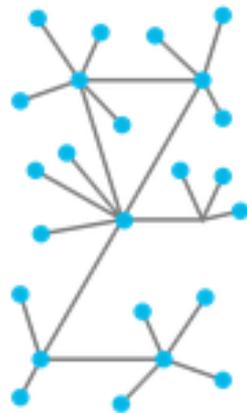
Distributed Ledger

1. Blocks are Sequential
2. Each Node has a Copy
3. Reconciled Every 10 Minutes
4. Public or Private

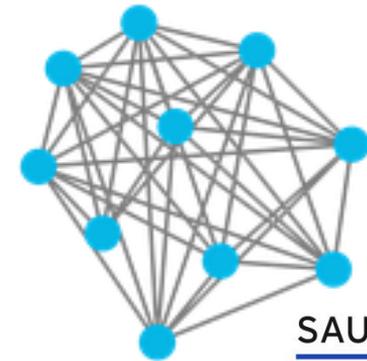
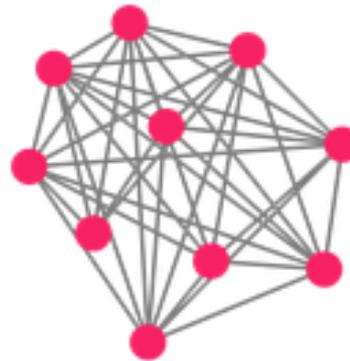
Centralized



Decentralized

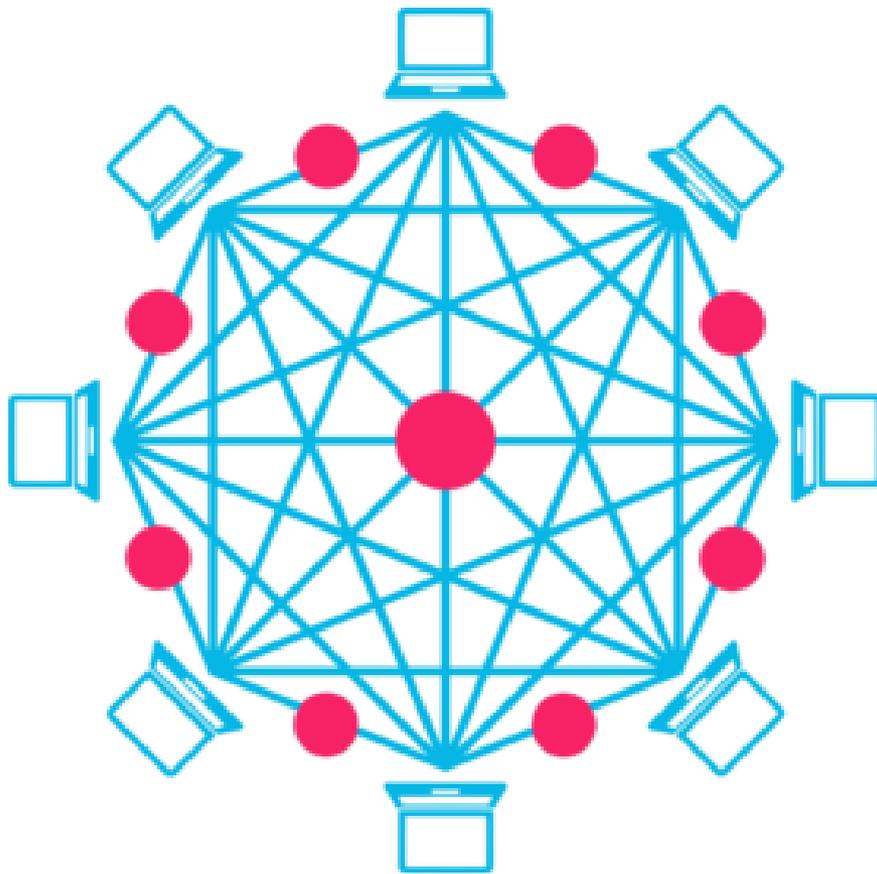


Distributed Ledgers



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Cybersecurity



- No Central Vulnerability
- No Single Point of Failure
- Multi-Signature/Dual Factor Authentication
- Public Key
- Private Key
- Wallet – Organization
- Wallet - Individual

Blockchain Explained Through College Basketball

- You and a friend bet on a college basketball game, UVA vs. Duke. You agree that the bet is for \$100. The bet was placed a month before the game, leaving plenty of time for either to forget the amount.
- Both of you write down the bet in your independent “ledgers.” You write the bet in your phone and your friend puts it into Excel. Neither of you has any way to know what was written by the other, but both being honest and knowing the game is far off, you make the notes.
- Your friend inadvertently leaves out a zero, making the bet \$10 in his records, not \$100.
- The game is played and UVA wins. It’s time for your Duke fan friend (the worst kind of friend) to pay up. You call him up and ask for the \$100 that was agreed to. He responds that it was \$10. When you protest the amount, he tells you he has it in Excel as \$10, not \$100 as you suggest. You respond that you have it written down in your phone and it was \$100.
- You are upset because you feel like he is trying to weasel out of a bet and your friend is upset because he is thinking you changed the terms of the bet. To deal with it, there are a few options:
 - Your friend can refuse to pay you anything until you have come to his number.
 - You can agree to take the \$10, upset thinking your friend “screwed you.”
 - Your friend can come to your number of \$100, upset thinking you are “screwing him.”
 - You guys can meet in the middle.
 - You can hire a lawyer and sue your friend.
- Enter blockchain. The bet would be recorded on the blockchain and both of you would have an identical copy. The \$100 would have been agreed to by both parties. If either party tried to modify it, it would require consensus and all modifications would be ledgered, showing a perfect history of everything that happened.

Source: <https://www.freightwaves.com/news/blockchain-explained-through-basketball>

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Cryptocurrency 101

- Like legal tender, cryptocurrencies or digital currencies allow their owners to buy goods and services.
- Cryptocurrency is regulated far less heavily than legal tender, although there is an increasing amount of regulatory scrutiny over digital currencies.
- A growing number of companies are issuing their own currencies, sometimes referred to as tokens. These tokens can be traded for the good or service that the company provides.
- Cryptocurrencies use a technology called “blockchain.” Blockchain is a decentralized technology spread across many computers that manages and records transactions. A hallmark feature of blockchain technology, and one of its attractive features, is its purported security.

How Many Cryptocurrencies Are On the Market? What About ICOs? Is Bitcoin the Only Real Game in Town?

- As of January 2018, about 1,400 cryptocurrencies were being traded.
- By December 2017, per Token Report, initial coin offerings (ICOs), which Nick will discuss in more detail, had raised \$1.38 billion in the fourth quarter. This lagged slightly behind third quarter numbers (\$1.74 billion).
- Compare these figures with ICO raises in all of 2016 (\$100 million) and you begin to see the fairly recent explosive growth in this market.
- These ICO fundraising statistics do not include the value of the most popular cryptocurrencies like Bitcoin and Ethereum (ether), which have already gone public.
- As of Jan. 5, 2018, the total value of all Bitcoins was \$283 billion. Coming in second was Ripple, valued at \$119 billion. Per Coin Market Cap, the total value of all cryptocurrencies was about \$708 billion.

Bitcoin Volatility



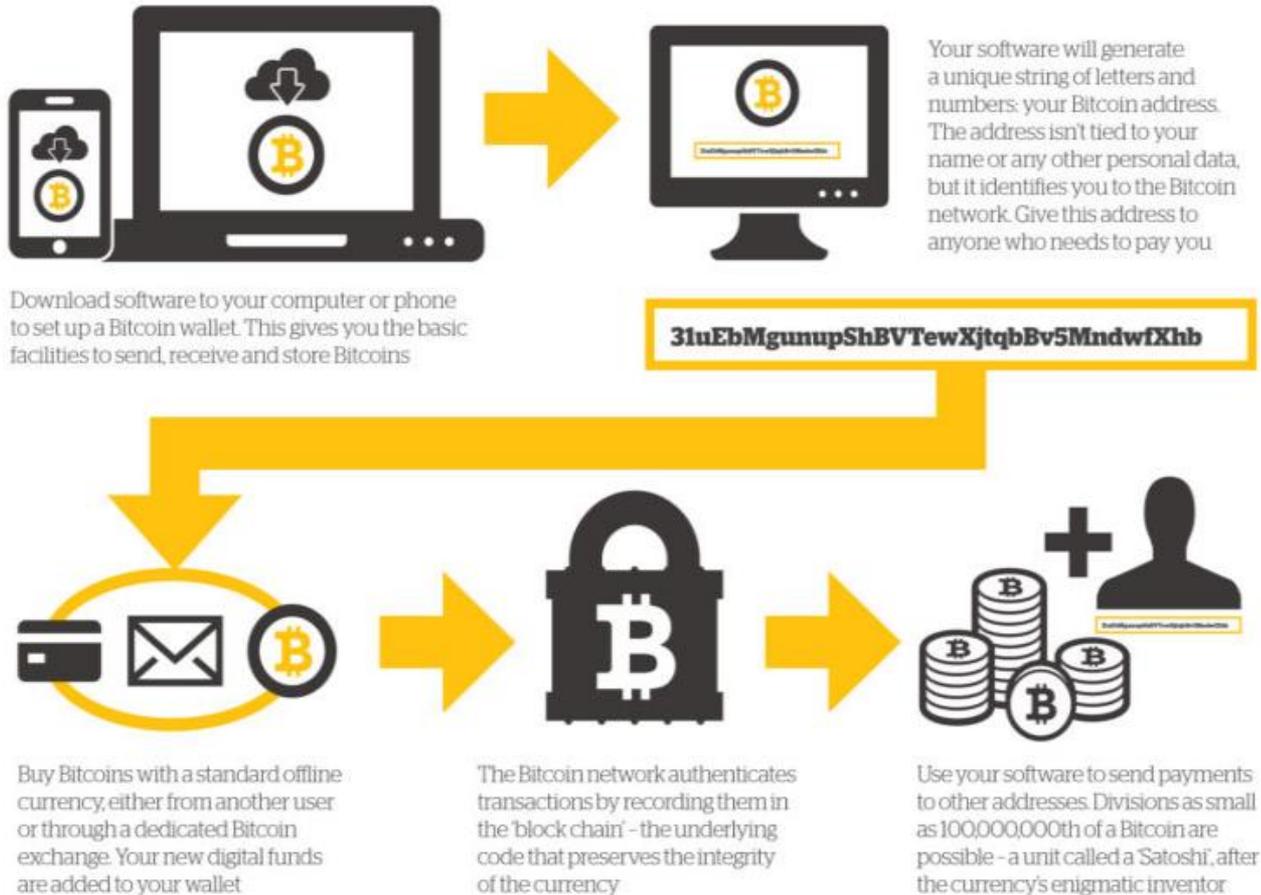
Source: <https://www.coindesk.com/price>

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Is There a Reason to Use/Buy Cryptocurrency, or is This Another Annoying Millennial Fad?

- Bitcoin: Big in investing, but still lousy for buying a sandwich:
<https://www.cnet.com/news/bitcoin-cryptocurrency-big-in-investing-but-still-lousy-for-buying-a-sandwich/>:
 - “This lack of spending with cryptocurrencies could limit their future potential. Bitcoin, ethereum and other digital currencies may remain in the realm of investors and crypto enthusiasts, instead of becoming long-sought universal monies that people use every day and can be spent at any store or website around the world.”
 - “While these crypto-sales make up just 5 percent of his business, he likes using digital money because transactions are irreversible, ensuring he'll get paid for a move without fear a customer will charge back the transaction. Plus, past moves have the potential of accruing in value as bitcoin prices rise and some international customers found it easier to use, he said.”

How Does Digital Currency Work? (Simple)



How Does Digital Currency Work? (Complex)

How a Bitcoin transaction works

Bob, an online merchant, decides to begin accepting bitcoins as payment. Alice, a buyer, has bitcoins and wants to purchase merchandise from Bob.

WALLETS AND ADDRESSES

Bob and Alice both have Bitcoin "wallets" on their computers.

Wallets are files that provide access to multiple Bitcoin addresses.

An address is a string of letters and numbers, such as 1HULMvZEPkJEPCk438EKJLlybLCWf0pH.

CREATING A NEW ADDRESS

Bob creates a new Bitcoin address for Alice to send her payment to.

Each address has its own balance of bitcoins.

SUBMITTING A PAYMENT

It's tempting to think of addresses as bank accounts, but they work a bit differently. Bitcoin users can create as many addresses as they wish and in fact are encouraged to create a new one for every new transaction to increase privacy. So long as no one knows which addresses are Alice's, her anonymity is protected.

Public Key Cryptography 101

When Bob creates a new address, what he's really doing is generating a "cryptographic key pair," composed of a private key and a public key. If you sign a message with a private key (which only you know), it can be verified by using the matching public key (which is known to anyone). Bob's new Bitcoin address represents a unique public key, and the corresponding private key is stored in his wallet. The public key allows anyone to verify that a message signed with the private key is valid.

VERIFYING THE TRANSACTION

Gary, Garth, and Glenn are Bitcoin miners.

Their computers bundle the transactions of the past 10 minutes into a new "transaction block."

The miners' computers are set up to calculate crypto-graphic hash functions.

Alice's wallet holds the private key for each of her addresses. The Bitcoin client signs her transaction request with the private key of the address she's transferring bitcoins from.

Anyone on the network can now use the public key to verify that the transaction request is actually coming from the legitimate account owner.

Cryptographic Hashes

Cryptographic hash functions transform a collection of data into an alphanumeric string with a fixed length, called a hash value. Even tiny changes in the original data drastically change the resulting hash value. And it's essentially impossible to predict which initial data set will create a specific hash value.

The root of all evil: 6d0a1899 086a... (56 more characters)

The root of all evil: 486c 6b4 6dde...

The root of all evil: b8db 7ee9 8392...

Nonces

To create different hash values from the same data, Bitcoin uses "nonces." A nonce is just a random number that's added to data prior to hashing. Changing the nonce results in a wildly different hash value.

The mining computers calculate new hash values based on a combination of the previous hash value, the new transaction block, and a nonce.

The root of all evil ??? 0000 0000 0000 ...

Creating hashes is computationally trivial, but the Bitcoin system requires that the new hash value have a particular form—specifically, it must start with a certain number of zeros.

The miners have no way to predict which nonce will produce a hash value with the required number of leading zeros. So they're forced to generate many hashes with different nonces until they happen upon one that works.

TRANSACTION VERIFIED

As time goes on, Alice's transfer to Bob gets buried beneath other, more recent transactions. For anyone to modify the details, he would have to redo the work that Gary did—because any changes require a completely different winning nonce—and then redo the work of all the subsequent miners. Such a feat is nearly impossible.

State-Backed Cryptocurrency: Venezuela as a Case Study

- In February, Venezuela announced that it was launching a new cryptocurrency, called the petro, which it says will help save the country's failing economy.
- The government of the oil-rich nation pledged that each petro coin would be backed by the value of one barrel of oil. The government plans to circulate around 100 million petro coins, which it hopes will raise around \$6 billion, per a government-issued white paper.
- Members of the political opposition argue that the petro is illegal because Venezuela's constitution stipulates that the country's oil reserves cannot be used as a guarantee for financial operations.
- The technology adds a high-tech veneer to Venezuela's newest currency, but many analysts say Venezuela's petro is actually similar to a government bond. And the U.S. Treasury also views the transactions as a public debt operation, making them illegal under U.S. sanctions.
- The U.S. imposed economic sanctions against Venezuela in August, prohibiting the country from borrowing money from U.S. creditors. The Treasury Department also banned debt trades for bonds issued by the Venezuelan government and its state-owned oil company PDVSA.
- Venezuela isn't the first country to use cryptocurrencies to avoid U.S. sanctions. In January, Russia's government also recently ordered the creation of its own cryptocurrency, called the cryptoruble.

Source: <http://www.newsweek.com/venezuela-launches-its-own-bitcoin-desperate-attempt-save-failing-economy-813782>.

What is an ICO (initial coin offering)?

- An ICO is a fundraising mechanism in which a venture sells its own cryptocurrency “tokens” to investors in exchange for legal tender or other digital currencies like Bitcoin and Ether.
- Anyone can do it; “Dogecoin” was introduced as a “joke currency”; it describes itself as “an open source peer-to-peer digital currency, favored by Shiba Inus worldwide.”
- Dogecoin has a current market cap of \$633.46 million; at one point, it was \$2 billion.



How Do You Launch an ICO?

- Create a document essentially detailing exactly how the system would work (usually called a white paper)
- Make a nice looking website and explain why your venture is a good idea
- Ask for people to send you legal tender (or often Bitcoin or Ether) and in return you send them back your token.
- Consider submitting your ICO to some listings that run databases of what they perceive to be quality ICOs (*e.g.*, coinschedule.com).
- Investors hope that your token will get used a lot and be in high circulation, which raises the value of the currency.
- Typically, investors can hold your token and receive dividends (if provided), trade your token, or redeem your token for cash (through an exchange).

How Do You Launch an ICO?

- In mid-2014, the Ethereum Foundation sold ETH against 0.0005 Bitcoin each. They received nearly \$20 million; it was one of the largest crowdfunding events ever and served as the capital base for the development of Ethereum.
- If you invested then, you would have made a 14,000% profit.
- Among other things, Ethereum has made it much easier for ventures to launch their own ICOs, using the Ethereum platform.
- Aragon raised around \$25 million in just 15 minutes; Basic Attention Token raised \$35 million in only 30 seconds; and Status.im raised \$270 million in a few hours.
- According to CB Insights, 2017 saw over 5x more capital deployed in ICOs than in equity financings to blockchain startups. ICOs raised over \$5B across nearly 800 deals in 2017, while equity investors deployed \$1B in 215 deals to the sector.

Types of Tokens

- 4 common types of ICO coins are equity tokens, debt tokens, asset tokens, and utility tokens.
- **Equity.** Equity tokens represent ownership of company stock or debt. Companies effectively issue shares and voting rights over the blockchain.
- **Debt.** Debt tokens often take the form of short-term loans. One example is the cryptocurrency Steem, which can be used to purchase Steem Dollars. The users who hold Steem Dollars receive 10% interest.

Types of Tokens

- **Asset.** Through ICOs, investors have access to a wide variety of asset tokens, ranging from coins redeemable for precious metals to tokens backed by real estate.
- **Utility.** Often call user tokens, provide users with access to a future product or service. Through utility token ICOs, startups can raise capital to fund the development of their blockchain projects, and users can purchase future access to that service, sometimes at a discount.
- An example of a utility token is the Basic Attention Token (BAT). The BAT token functions as a medium exchange between users, advertisers, and publishers who participate in the Brave browser *ecosystem* (like Google).
- Advertisers purchase ads using BAT tokens, which are then distributed among both publishers and browser users as compensation for hosting the ads and viewing them, respectively.
- Filecoin raised over \$250 million through the sale of its token that will enable access to its decentralized cloud storage service.

Issues/Risks - Security

- Ernst & Young (E&Y) stated in a report released on January 22, 2018 that more than 10% of ICO funds are lost or stolen in hacker attacks (almost \$400 million), and that cryptocurrency exchanges have an average of \$2 billion in hacking losses.

Further Reading

- 4 Things Real Estate Lawyers Need To Know About Bitcoin:
https://www.law360.com/realestate/articles/1011309/4-things-real-estate-lawyers-need-to-know-about-bitcoin?nl_pk=a814f0b5-530a-4819-8100-a2847962ada4&utm_source=newsletter&utm_medium=email&utm_campaign=realestate&read_more=1.
- Winklevoss twins attack older generation for failing to understand bitcoin:
<http://www.independent.co.uk/news/business/news/winklevoss-twins-bitcoin-wall-stret-cryptocurrencies-older-finance-investors-digital-currency-a8201266.html> (“Tyler and Cameron Winklevoss, who originally bought 120,000 bitcoins in 2012 of which they may have less or more of now, told CNBC that CEOs such as Berkshire Hathaway’s Warren Buffett and JPMorgan chief executive Jamie Dimon suffered from a ‘failure of the imagination.’”).

Contact Information

Rick Carroll

Wilmington, DE

rick.carroll@saul.com

302.421.6887

Baltimore

Lockwood Place
500 East Pratt Street, Suite 900
Baltimore, MD 21202-3171
T: 410.332.8600 • F: 410.332.8862

Boston

131 Dartmouth Street
Suite 501
Boston, MA 02116
T: 617.723.3300 • F: 617. 723.4151

Chesterbrook

1200 Liberty Ridge Drive
Suite 200
Wayne, PA 19087-5569
T: 610.251.5050 • F: 610.651.5930

Chicago

161 North Clark
Suite 4200
Chicago, IL 60601
T: 312.876.7100 • F: 312.876.0288

Fort Lauderdale

200 E. Las Olas Blvd.
Suite 1000
Fort Lauderdale, FL 33301
T: 954.713.7600 • F: 954.713.7700

Harrisburg

Penn National Insurance Plaza
2 North Second Street, 7th Floor
Harrisburg, PA 17101-1619
T: 717.257.7500 • F: 717.238.4622

Miami

Southeast Financial Center
200 S. Biscayne Blvd., Suite 3600
Miami, FL 33131
T: 305.428.4500 • F: 305.374.4744

New York

1270 Avenue of the Americas,
Suite 2005
New York, NY 10020
T: 212.980.7200 • F: 212.980.7209

Newark

One Riverfront Plaza
Newark, NJ 07102
T: 973.286.6700 • F: 973.286.6800

Philadelphia

Centre Square West
1500 Market Street, 38th Floor
Philadelphia, PA 19102-2186
T: 215.972.7777 • F: 215.972.7725

Pittsburgh

One PPG Place
30th Floor
Pittsburgh, PA 15222
T: 412.209.2500 • F: 412.209.2570

Princeton

650 College Road East, Suite 4000
Princeton, NJ 08540-6603
T: 609.452.3100 • F: 609.452.3122

Washington

1919 Pennsylvania Avenue, N.W.
Suite 550
Washington, DC 20006-3434
T: 202.333.8800 • F: 202.337.6065

West Palm Beach

515 N. Flagler Drive
Suite 1400
West Palm Beach, FL 33401
T: 561.833.9800 • F: 561.655.5551

Wilmington

1201 North Market Street
Suite 2300 • P.O. Box 1266
Wilmington, DE 19899
T: 302.421.6800 • F: 302.421.6813

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Crypto Law and Regulations

Justin S. Wales



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Regulating New Technologies

- Regulators are trying their best...but are in a difficult position.
 - On the one hand, they are being asked to adapt quickly to new technologies that they may not understand in order to protect the public.
 - On the other hand, over-regulation or uninformed regulation can prevent innovation or create ineffectual laws.
- Early challenges in regulating crypto:
 - Bitcoin/Crypto/Smart Contracts are often lumped into one category, so proposed regulations often lack the nuances necessary to create practical regulations.
- So...no one *really* knows how to describe these things



Battle Royale

Crypto is viewed as:

	FinCEN	IRS	SEC	CFTC	States
					
Currency	X				X
Property		X			X
Security			X		X
Commodity				X	X



Financial Crimes Enforcement Network – Department of the Treasury



- Collects information on financial transactions to combat money laundering and terrorism.
- Requires money service businesses to register and comply with applicable KYC/AML regulations.
- March 2018 FinCEN published a letter that indicates tokens released through ICOs *could* be deemed “money” under applicable regulations requiring issuers to comply with FinCEN’s registration requirements:

“...a developer that sells convertible virtual currency, including in the form of ICO coins or tokens, in exchange for another type of value that substitutes for currency is a money transmitter and must comply with AML/CFT requirements that apply to this type of [money services business]. An exchange that sells ICO coins or tokens, or exchanges them for other virtual currency, fiat currency, or other value that substitutes for currency, would typically also be a money transmitter.”

- FinCEN actually issued the first federal enforcement against a virtual currency exchanger in 2015:
 - Assessed \$700k in fines against Ripple for violating the Bank Secrecy Act by acting as a money service business and selling XRP without first registering with FinCEN and implementing AML program to prevent use by terrorists.



Internal Revenue Service



- 2014 – IRS first issued guidance classifying virtual currencies, “such as bitcoin,” as property.
- Has made no distinction between types of cryptocurrencies.
- Subjects all cryptocurrencies to capital gains treatment.
 - Pro: Recognizes that many purchase crypto as an investment.
 - Con: Limits potential bitcoin and other virtual currencies from being adopted as currencies because each purchase (including of other cryptocurrencies) is a taxable event (i.e., TAX NIGHTMARE).
- At the same time, virtual currencies are taxed as income if paid as wages.
- Has not provided definitive guidance on treatment of “forks,” “air drops” or virtual currencies that are “mined” by the holder.



CFTC – Commodity Futures Trade Commission



- Views “virtual currencies” as commodities regulated by CFTC.
 - E.D.N.Y. in *CFTC v. McDonnell* (2018) agreed with CFTC’s position on the basis that “Virtual currencies are ‘goods’ exchanged in a market for a uniform quality and value...They fall well within the common definition of ‘commodity’.”
 1. A commodity, as defined in the Commodity Exchange Act, includes the agricultural commodities enumerated in Section 1a(9) of the Commodity Exchange Act, 7 USC 1a(9), and all other goods and articles, except onions as provided in Public Law 85-839 (7 USC 13-1), a 1958 law that banned futures trading in onions, and all services, rights, and interests in which contracts for future delivery are presently or in the future dealt in;
 2. A physical commodity such as an agricultural product or a natural resource as opposed to a financial instrument such as a currency or interest rate. See 7 USC 1a(9)
- Commodity Exchange Act intends to regulate sale of futures or derivatives of commodities, but grants authority to exercise jurisdiction on fraud.
 - By ruling virtual currencies are commodities, CFTC can exercise its jurisdiction over fraud that does not directly involve the sale of futures or derivative contracts.
 - Problem: Many virtual currencies are more reasonably classified, and are intended to be currencies or financial instruments.

SEC – Securities and Exchange Commission



- Regulates securities.
- Underlying purpose is to prevent investor fraud.
- Section 2(a)(36) of the 1940 Act defines security as:
 - Any note, stock, treasury stock, security future, security-based swap, bond, debenture, evidence of indebtedness, certificate of interest or participation in any profit-sharing agreement, collateral-trust certificate, preorganization certificate or subscription, transferable share, ***investment contract***, voting-trust certificate, certificate of deposit for a security, fractional undivided interest in oil, gas, or other mineral rights, any put, call, straddle, option, or privilege on any security, certificate of deposit, or group or index of securities (including any interest therein or based on the value thereof), or any put, call, straddle, option, or privilege entered into on a national securities exchange relating to foreign currency, or, in general, any interest or instrument commonly known as a “security,” or any certificate of interest or participation in, temporary or interim certificate for, receipt for, guarantee of, or warrant or right to subscribe to or purchase, any of the foregoing.

Investment Contract

- SEC's definition of securities is purposefully *broad*.
- An investment contract is an investment of:
 - Money
 - In a common enterprise
 - With a reasonable expectation of profits
 - To be derived solely from the entrepreneurial or managerial efforts of others. *SEC v. Edwards*, 540 U.S. 389, 393 (2004); *SEC v. W.J. Howey Co.*, 328 U.S.293, 301 (1946).

As explained by SEC in *US v. ReCoin* (E.D. NY 2018), the *Howey* test is designed to be “flexible” and “capable of adaptation to meet the countless and variable schemes devised by those who seek the use of the money of others on the promise of profits.” *Howey*, 328 U.S. at 299.

“Utility Tokens?”

- Throughout 2017, token offerings or ICOs became a fundraising mechanism. Over \$4 billion raised through token sales. Lots of fraud, poorly managed or designed projects. Some very good projects.
 - Many of the tokens purported to be “utility tokens” rather than “securities”
 - SEC has not weighed in on what constitutes a “utility token.” In fact, they have not recognized the existence of “utility tokens.” They only recognize security vs. not security.
- Considerations on whether something is or is not a security:
 - How it is advertised/promoted
 - Whether there is actually any utility upon purchase of token
 - Intent of investor



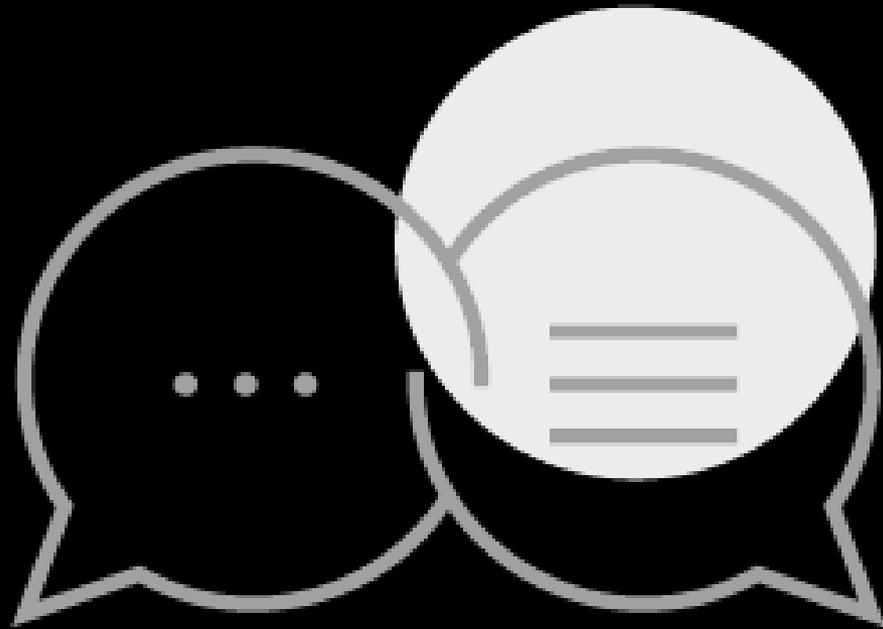
States

- A smorgasbord of different types of regulations including:
 - Defining Money Transmission to explicitly include or exclude virtual currencies.
 - Money Transmission is a challenge for virtual currency businesses as each state takes a radically different approach.
 - Recognizing legality of smart contracts
 - Including virtual currency into definition of money laundering
 - Including/excluding certain types of virtual currencies from state securities regulations.

Different Approaches:

- NY – Created the “Bit License” to broadly regulate virtual currency businesses. Drove business away from NY and there are attempts to amend to lessen burdensome compliance requirements.
- Wyoming – Created definition of “utility token” that exempts certain types of tokens from state’s definition of security and exempted virtual currencies from state’s MT requirement.





Questions and Answers

About Justin Wales and Carlton Fields



Justin Wales

jwales@carltonfields.com
www.carltonfields.com/jwales/
305.347.6830

Justin serves as chair of the firm's blockchain technology and digital currency practice. He advises institutional clients (logistics, healthcare, insurance, telecommunications, etc.) on adoption of new technologies. He also represents exchanges, wallets, token issuers, and traders. He speaks and writes often about the intersection between law and technology.

Justin is also an experienced litigator who assists clients with constitutional and intellectual property disputes, including First Amendment, trade secrets, and access to government-held information claims.

In late 2010, he became involved in Bitcoin. Upon graduating from law school in 2012, he practiced as a First Amendment attorney. As the industry grew, his practice became more transactional and regulatory.

Carlton Fields is at the forefront of identifying the numerous complex legal issues faced by today's innovators.

Digital currencies, smart contracts, and blockchain/distributed ledger technologies have ushered in a new era of innovation that we believe has the potential to disrupt the way we interact with one another, our governments, and private industry. As innovation continues, the technology's potential to transform how business is conducted presents new challenges and opportunities across nearly every conceivable industrial sector.

As the law in this area develops, Carlton Fields has taken a forward-looking approach to working with clients on blockchain-related issues, including those arising from the use of cryptocurrencies and smart contracts. The members of our interdisciplinary blockchain practice are committed to embracing and maximizing the transformative potential of this technology.

**CARLTON
FIELDS**



Smart Contracts, **Simplified:** *Fundamentals & Applications*

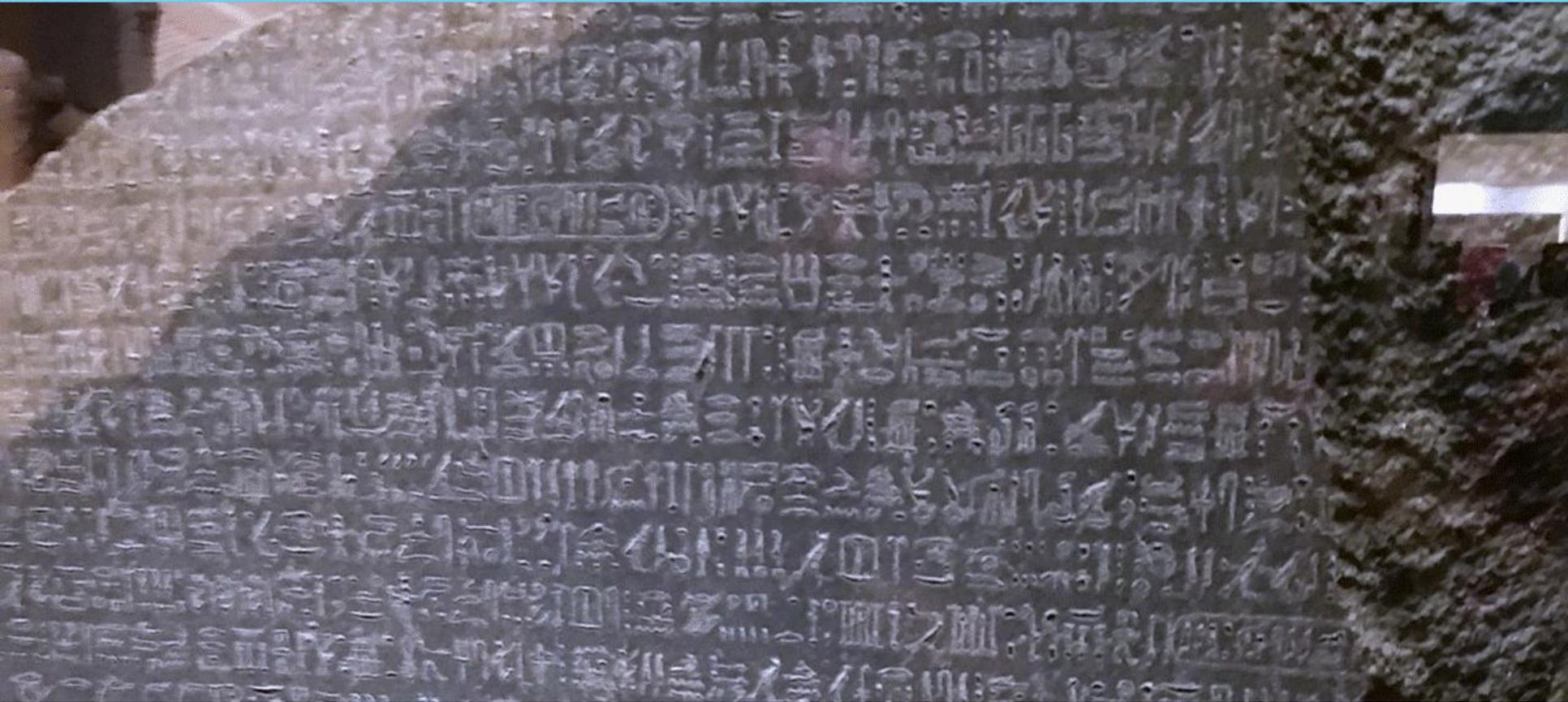
Olga V. Mack

VP of Strategy at Quantstamp

So What's Ethereum, Anyway?



Let's (finally) set this agreement in stone!

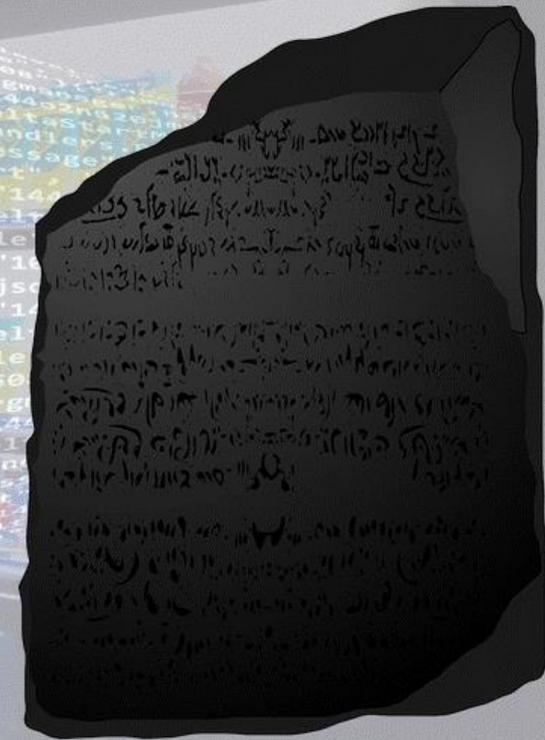


“Contract” Is A Very Loaded, Overused Term



So What Exactly *is* a Smart Contract?

A **Smart Contract** is a self-executing contract with the terms of the contract between buyer and seller directly written into lines of code. It allows the performance of credible transactions without third parties.



Example: Real Estate



Credit Suisse syndicated loans demo with US Bank, Barklays, Wells Fargo and others:

“Coordinators of a blockchain project backed by the financial industry say they have successfully demonstrated that the distributed ledger technology can be used to syndicate, trade and make payments on leveraged loans.” American Banker Association Article*

*American Banker article about syndicated loans on blockchain:
<https://www.americanbanker.com/news/bank-consortium-demos-leveraged-loan-trade-via-blockchain>

Example: Real Estate

Credit Suisse syndicated loans demo with US Bank, Barclays, Wells Fargo and others:

Emmanuel Aidoo, the head of Credit Suisse's blockchain initiatives: "This demonstration sets us on a path to increase efficiency and reduce costs, which will benefit banks and clients alike. By connecting a network of agent banks through blockchain we can achieve faster and more certain settlements in the loan market."*

* <https://www.coindesk.com/r3-banks-startups-test-blockchain-system-syndicated-loans/>



Example: Supply Chains & Logistics



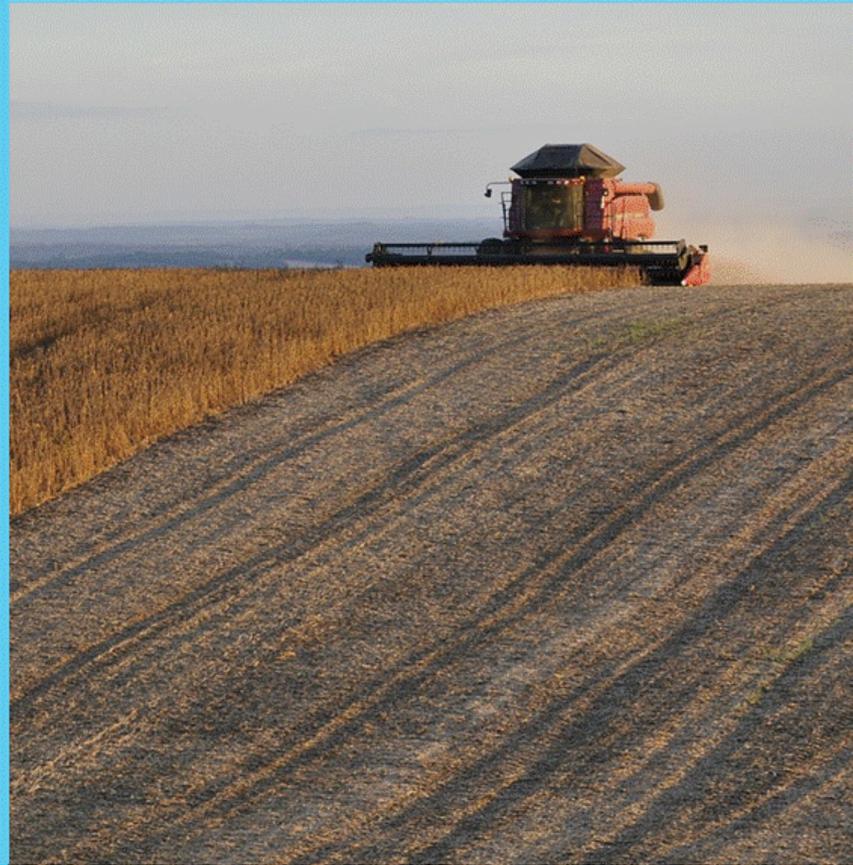
Louis Dreyfus on the soybean trade:
“We noticed very significant efficiency gains far beyond what we expected,” Robert Serpollet, global head of trade operations at Louis Dreyfus, said, adding that the time spent on processing documents and data had been reduced five-fold. Blockchain, which first emerged as the system underpinning cryptocurrency bitcoin, is a distributed record of transactions that is maintained by a network of computers on the internet.”*

* <https://uk.reuters.com/article/grains-blockchain/u-s-soy-cargo-to-china-traded-using-blockchain-idUKL8N1PG0VJ>

Example: Supply Chains & Logistics

The Chairman of the US Commodity Futures Trading Commission, Christopher Giancarlo: “Sixty-six million tons of American soybeans were just handled through a blockchain transaction by Dreyfus company in China. So Bitcoin is now being used, it’s being used in our American transportation and logistics system . . . I think this distributed ledger technology has enormous potential. Now how it will be realized, when it will be realized are challenges, and those we can’t say.”*

* <http://fortune.com/2018/02/06/bitcoin-price-cftc-sec-cryptocurrency-hearing/>



Example: Management & Operations



Spanish bank BBVA: “BBVA, in collaboration with Wave, conducted the first pilot that uses blockchain to automate the electronic submission of documents in an import-export transaction between Europe and Latin America. Thanks to Wave’s solution, which uses Distributed Ledger Technology (DLT) and blockchain, BBVA was able to reduce the time required to send, verify, and authorize an international trade transaction, which normally takes from seven to ten days, to just 2.5 hours.”*

* BBVA: <https://www.coindesk.com/bbva-blockchain-pilot-cuts-time-for-international-trade-transactions/>

Example: Healthcare



- ▶ **IBM Blockchain Blog:**
- ▶ **“EMR: Blockchain platforms can support the entire lifecycle of a patient’s electronic medical record (EMR). For billing documentation it provides robust security and flawless auditability, eliminating redundant administrative units.**
- ▶ **Counterfeit drug prevention and detection:** Blockchain can be used to introduce anti-tampering capabilities in the manufacturing phase to ensure pharmaceuticals are genuine.
- ▶ **Clinical trial results:** Blockchain can provide accountability and transparency to the clinical trial reporting process by curating all trials associated with a published study.
- ▶ **Internet of Things:** Patient-generated health and device data from IOT-connected medical equipment has enormous promise, especially if interconnected with health records accessed by providers and patients.

* <https://www.ibm.com/blogs/blockchain/2017/12/blockchain-good-health-business/>

Smart Contracts: Pros & Cons

Pros

Trust & accuracy
Automation
No intermediaries
Built-in backups
Safety
Efficiency
Savings

Human error
No regulation
Coding experience

Cons



To The Future of Smart Contracts!

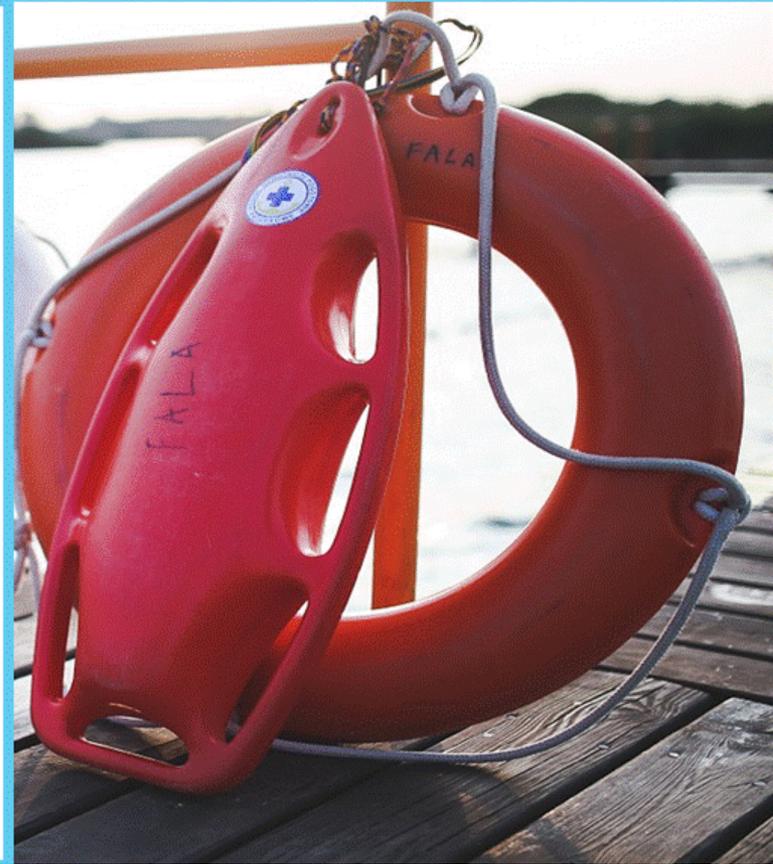
- ▶ **Who cares or should care?**
 - ▶ Legal departments
 - ▶ Law firms
 - ▶ Alternative legal service providers
 - ▶ Banks
 - ▶ Governments
 - ▶ Accounting firms
 - ▶ Suppliers and purchasers of goods
 - ▶ Technology (legal and non-legal) vendors
 - ▶ And, numerous others



How Can We Keep Up?

▶ Books

- ▶ [*Blockchain Revolution: How the Technology Behind Bitcoin Is Changing Money, Business, and the World*](#) by Alex Tapscott and Don Tapscott
- ▶ [*The Business Blockchain: Promise, Practice, and Application of the Next Internet Technology*](#) by William Mougayar
- ▶ [*Blockchain for Beginners: Guide to Understanding the Foundation and Basics of the Revolutionary Blockchain Technology*](#) by Scott Marks
- ▶ [*Blockchain: Ultimate guide to understanding blockchain, bitcoin, cryptocurrencies, smart contracts and the future of money*](#) by Mark Gates
- ▶ [*Ethereum: Blockchains, Digital Assets, Smart Contracts, Decentralized Autonomous Organizations*](#) by Henning Diedrich
- ▶ [*The Blockchain: A Guide for Legal and Business Professionals*](#), by Shawn Amual



How Can We Keep Up?



▶ Articles

- ▶ <https://abovethelaw.com/2018/01/blockchain-disruption-beyond-bitcoin/>
- ▶ <https://abovethelaw.com/2018/02/blockchain-disrupting-industries-and-transforming-legal-roles/?rf=1>
- ▶ <https://abovethelaw.com/2018/03/blockchain-are-you-ready-for-cross-industry-disruption/>

▶ Podcasts, talks & educational resources

- ▶ Blockchain at Berkeley: <https://blockchain.berkeley.edu/>
- ▶ Talks by Bettina Warburg, including TED talks: https://www.ted.com/talks/bettina_warburg_how_the_blockchain_will_radically_transform_the_economy
- ▶ [a16z Podcast](#) hosted by Andreessen Horowitz, a premier venture capital firm
- ▶ [Coin Mastery](#) hosted by Carter Thomas, Investor and Marketer
- ▶ [Unchained](#) hosted by Laura Shin, Senior Editor at Forbes

How Can We Keep Up?

► Online resources

- ▶ Global Legal Blockchain Consortium: <http://legalconsortium.org>
- ▶ Global Legal Hackathon: <https://globallegalhackathon.com>
- ▶ IBM Resources, including Blockchain 101: <https://www.ibm.com/blockchain>
- ▶ edX online course, Blockchain for Business: <https://www.edx.org/course/blockchain-business-introduction-linuxfoundationx-lfs171x>
- ▶ Ethereum Introduction: <https://github.com/ethereum/wiki/wiki/Ethereum-introduction>
- ▶ Ethereum White Paper: <https://github.com/ethereum/wiki/wiki/White-Paper>
- ▶ Ethereum Yellow Paper: <https://ethereum.github.io/yellowpaper/paper.pdf>
- ▶ Deloitte paper on use of blockchain for smart contracts: <https://www2.deloitte.com/insights/us/ed/focus/signals-for-strategists/using-blockchain-for-smart-contracts.html>
- ▶ Deloitte paper on blockchain for Supply Chain Management: <https://www2.deloitte.com/content/dam/Deloitte/lu/Documents/technology/lu-blockchain-internet-things-supply-chain-traceability.pdf>



Let's Continue the Conversation!



Olga V. Mack

@OlgaVMack

hello@olgamack.com

olga@quantstamp.com