Blockchain and Cryptocurrency Primer

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What is Blockchain?

A BLOCKCHAIN IS A DISTRIBUTED LEDGER WHERE TRANSACTIONS ARE CRYPTOGRAPHICALLY RECORDED AND VERIFIED.[1]

[1] Fortney, Lucas. "Blockchain, Explained." *Investopedia*, Investopedia, 7 Dec. 2018, www.investopedia.com/terms/b/blockchain.asp.

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Features of Blockchain

▶ **Immutable**

   ▶ You can addend information, but you cannot remove "errors".

▶ **Decentralized**

   ▶ The entire ledger is stored on every node (computer) that is part of the network.

▶ **Transparent**

   ▶ You can look up every transaction that as ever taken place.

   ▶ These transactions are pseudonymous. Only your public key (random string of letters and numbers) is seen; however, with some level of triangulation, other users (or the government) can trace transactions and public key to specific individuals.

▶ **Computational Logic**

   ▶ Allows for the use of smart contracts, which are algorithms and rules that automatically trigger transactions between nodes. These transactions are then recorded to the blockchain.

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Why use blockchain?

- ENHANCES REACH OF BUSINESS
- FASTER TRANSACTIONS
- REDUCES CHANCES OF FRAUD
- RELIABILITY AND TRANSPARENCY
- IMMUTABLE
- COST EFFECTIVE [2]

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How Does Blockchain Work – High Level

1. **A transaction takes place.**
   ▶ We purchase toys at a store that accepts cryptocurrency.

2. **The transaction is verified.**
   ▶ The blockchain's decentralized network of computers (i.e., nodes) verifies the time of transaction, the value of the toys purchased, and that the funds passed from us to the toy vender.

3. **The transaction is stored in a block**.
   ▶ Once the transaction has been verified, the transaction's "dollar amount", the public key of the toy seller, and our public key are stored in a block (which may also be stored with other transactions that took place around the same time on the same blockchain).

4. **The block is given a hash ("digital fingerprint").**
   ▶ The block containing the information of our toy purchase gets a digital fingerprint, called a "hash". Once hashed, the block is added/chained to other blocks of transactions.

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What are the different blockchains?

▶ The most used blockchain protocols are **Bitcoin** and **Ethereum**.

▶ The *Bitcoin protocol* is the first and most widely used blockchain protocol and it records transactions using bitcoin.

   ▶ It's cryptocurrency, bitcoin (with a lower-case "b") is only used a form of currency.

▶ *Ethereum* records transactions that use its cryptocurrency/asset, ETH.

   ▶ In addition to recording ETH transactions, developers can use Ethereum to write smart contracts (algorithms).

▶ "*Next Generation Blockchains*" are looking to resolve the scalability issues that face Bitcoin and Ethereum.

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What is Cryptocurrency? [2]

A <u>digital asset designed to work as a medium of exchange that uses cryptography to secure its transactions</u>, to control the creation of additional units, and to verify the transfer of assets [.]

<u>Cryptocurrencies use decentralized control</u> as opposed to centralized electronic money and central banking systems. <u>The decentralized control of each cryptocurrency works through a blockchain</u> [.]

[2] Bauerle, Nolan. "Why Use a Blockchain?" *CoinDesk*, CoinDesk, 15 Mar. 2017, www.coindesk.com/information/why-use-a-blockchain.

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Are all Crypto-Tokens the Same?

▶ No! Different tokens have different **functions**, **purposes**, and **may operate on different blockchains**.

▶ For example, the widely popular CryptoKitties, are an example of digital-collectibles:

  ▶ Like Pokemon, you can collect different CryptoKitties.

  ▶ You can also buy and sell CryptoKitties or breed them in order to make a rarer (i.e., valuable) CryptoKitty.
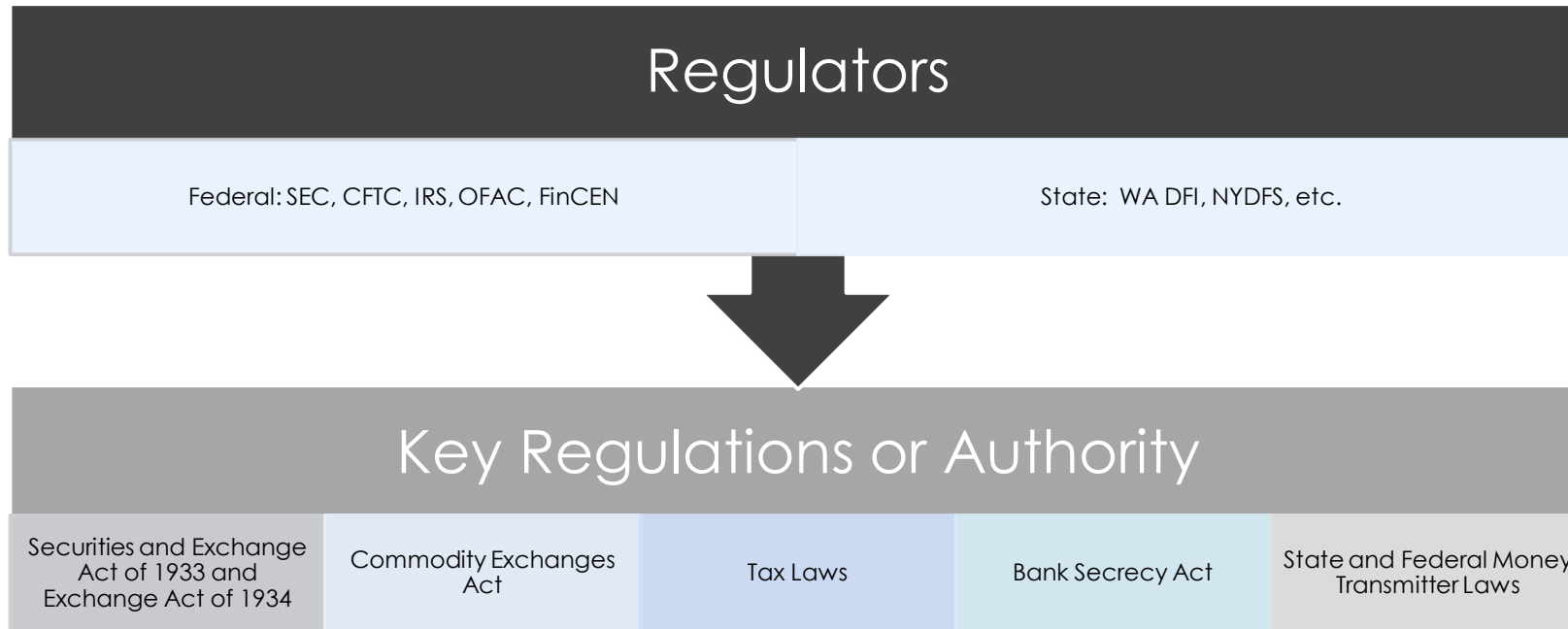
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Types of Tokens

- ▶ Security Tokens
- ▶ Utility Tokens (crypto assets)
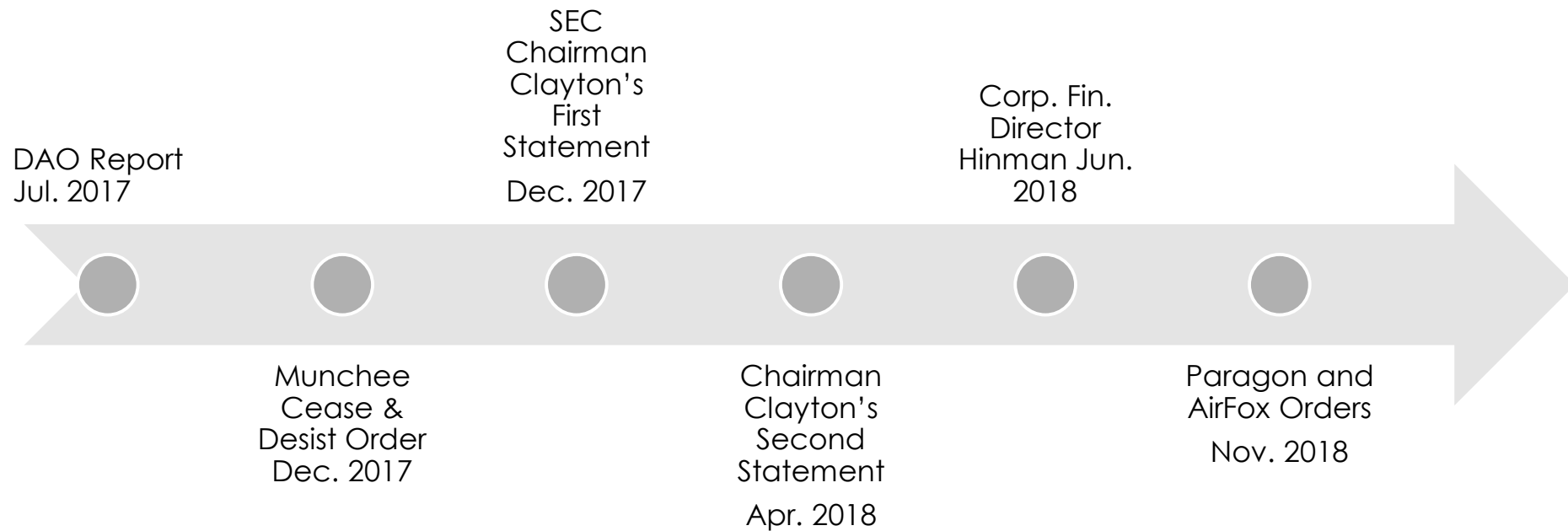- ▶ Stable Tokens
- ▶ Asset-Backed Tokens

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Using Blockchain: Decentralized Applications ("dApps")

▶ These are applications built on top of one or more blockchain protocols (similar to applications built on iOS or Android);

▶ These dApps may issue and use their own tokens to interact within the dApp;

▶ Therefore, blockchain protocols like Ethereum can support many types of tokens:

  ▶ Its native token, ETH, and

  ▶ ERC-20 (or other standards) tokens generally used by dApps.

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Regulatory Structure of Tokens

Regulators	
Federal: SEC, CFTC, IRS, OFAC, FinCEN	State: WA DFI, NYDFS, etc.

Key Regulations or Authority				
Securities and Exchange Act of 1933 and Exchange Act of 1934	Commodity Exchanges Act	Tax Laws	Bank Secrecy Act	State and Federal Money Transmitter Laws

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Legal Landscape – in flux

DAO Report
Jul. 2017

Munchee
Cease &
Desist Order
Dec. 2017

SEC
Chairman
Clayton's
First
Statement

Dec. 2017

Chairman
Clayton's
Second
Statement

Apr. 2018

Corp. Fin.
Director
Hinman Jun.
2018

Paragon and
AirFox Orders

Nov. 2018

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Blockchain and Auditing [4]

▶ Blockchain can serve as an open, distributed ledger that can record transactions between two parties efficiently and in a verifiable and permanent way

▶ Blockchain has applications in external audit. Performing confirmations of a company's financial status would be less necessary if some or all of the transactions that underlie that status are visible on blockchains. This proposal would mean a profound change in the way that audits work.

▶ A blockchain solution, when combined with appropriate data analytics, could help with the transactional level assertions involved in an audit, and the auditor's skills would be better spent considering higher-level questions.

▶ The extensive coverage can drastically improve the level of assurance gained in affected audit engagements.

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Auditing Crypto-Transactions

▶ Who are the parties involved in the transaction?

▶ Are the funds held in a secure way?

   ▶ Are the private keys ("passwords") securely stored?

   ▶ Who has access to the crypto-wallets?

   ▶ How many people need to authorize a release of funds (multi-sig wallets)?

▶ Is the crypto-transaction related to a real-life offchain transaction?

▶ How are the crypto-transactions classified in financial statements?

   ▶ Inventory

   ▶ Capital gain

   ▶ Like-kind exchange? (IRS says no.)

▶ How is an organization managing its treasury?

   ▶ Are there procedures detailing when and how to liquidate or how to diversify the types of crypto held?

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Bio - David

▶ David M. Otto has over thirty-one years experience in corporate finance, securities, mergers/acquisitions, corporate governance, and capital markets. He received his B.A. from Harvard University and his J.D. from Fordham University School of Law. He is the founding Managing Partner at Martin Davis, PLLC ("Martin Davis"), a boutique law firm based in Seattle, WA, and General Partner of Reflective Venture Partners ("Reflective"), a blockchain technology fund and strategic partnership with RChain Cooperative.

▶ Martin Davis is streamlining the contractual and legal processes necessary to launch innovative blockchain technology projects and decentralized application business models. Services provided include entity formation, transactional structure, token allocation, token-economics, contracts and legal documentation, legal opinions and memoranda, analysis regarding token payment/utility/asset-backed functionality, and Federal and State regulatory compliance.

▶ Martin Davis is currently representing various blockchain-related projects positioned to disrupt commerce, finance, and peer-to-peer transactions. These projects include (i) the development of technology that enables the fractional ownership of art, (ii) the design and deployment of a faster and more scalable blockchain protocol capable of providing solutions such as monetized content delivery and financial services, (iii) the creation of a decentralized retail e-commerce platform deploying smart contracts, and (iv) re-design and deployment of a "bounty" technology and payment platform for the Ethereum blockchain.

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Bio - Andrea

▶ Andrea Louie is an attorney at Martin Davis, PLLC and has experience in commercial transactions, and corporate law and governance. Her practice mainly involves representing blockchain-related projects positioned to disrupt commerce, finance, and peer-to-peer transactions. She is a blockchain enthusiast and enjoys supporting her clients as they develop new technology. Although her work has taken her around the world - negotiating with a Swiss Fortune 100 company and pitching partners in Japan – Andrea is dedicated to her local community and strives to support local organizations and entrepreneurs. As the founder of Women in Blockchain – Seattle, Andrea's goal is to promote the voices of women in this space and create a community that fosters new industry leaders.

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Further Reading

- *https://hbr.org/2017/01/the-truth-about-blockchain*

- https://docs.wixstatic.com/ugd/e826f9_6ee3e95a9460446f84a7123839b2e776.pdf

- https://www.coindesk.com/information

- https://coincenter.org/learn

- https://www.aicpa.org/content/dam/aicpa/interestareas/frc/assuranceadvisoryservices/downloadabledocuments/blockchain-technology-and-its-potential-impact-on-the-audit-and-assurance-profession.pdf

- https://medium.com/oracledevs/where-and-how-blockchain-can-be-a-better-option-than-the-traditional-centralized-system-model-edb0e3e1c9ee

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Any Questions?

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Sources

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[2] Bauerle, Nolan. "Why Use a Blockchain?" *CoinDesk*, CoinDesk, 15 Mar. 2017, www.coindesk.com/information/why-use-a-blockchain.