STATISTICAL SECURITIES COMPLIANCE

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Abstract

This Article makes three main contributions. First, this Article introduces the Solana blockchain as a public good and provides policy analysis for open innovation. Second, this Article introduces a new dataset for SEC blockchain enforcement, supporting empirical compliance analysis. Third, this Article draws on the legal informatics literature to provide a mechanism for applied analysis of digital assets on the Solana blockchain in the context of securities law. The main purpose of this Article is to introduce new methods for using natural language processing to automate compliance services on the Solana blockchain.

INTRODUCTION

The problem this work sets out to solve is how to differentiate between security and non-security tokens under U.S. law legally. While many digital tokens are not classified as "securities" and are thus not subject to SEC jurisdiction, many others are classified as securities by the SEC. It is often unclear whether a given token is a security, and making this determination through traditional legal analysis can prove to be quite

challenging. This ambiguity regarding the legal classification of digital tokens cuts to the core of digital asset regulation and will be a defining feature of twenty-first-century finance. This problem is so central to the future of finance because it underlies the essence of blockchain technology as a mechanism for decentralization and as a stimulus for economic opportunity, transparency, and legitimacy.

The solution to this classification problem is a statistical method for analyzing digital assets in the context of U.S. securities law. Drawing on the law and informatics scholarship, this Article introduces a new process and software for statistically analyzing digital assets on the Solana blockchain. The statistical strategies introduced in this Article provide a fair and concise method for differentiating between digital assets that are securities and digital assets that are not securities.

Part I provides an overview of blockchain technology, emphasizing Solana, a cutting-edge and global information technology. Part II discusses and describes data regarding securities law enforcement in the blockchain space and introduces a novel dataset. Part III draws on legal informatics to introduce new mechanisms for measuring blockchain compliance and applies those mechanisms to produce a computational analysis of assets on the Solana blockchain.

I. BLOCKCHAIN

Blockchains[1] are decentralized databases that are maintained by global computer networks.[2] According to scholar Primavera De Filippi, "Blockchain technology constitutes a new infrastructure for the storage of data and the management of software applications, decreasing the need for centralized middlemen."[3] Consisting of computers called nodes,[4] blockchains connect computers via the Internet.[5] This type of relationship among the various nodes is called a peer-to-peer network, a dynamic

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1. *See Generally* Emily Wells, et al., *Blockchain Benefits and Risks* (May 2018), https://www.researchgate.net/profile/Igor_Linkov/publication/325385235_Blockchain_Benefits _and_Risks/links/5df6b251a6fdcc2837245f1e/Blockchain-Benefits-and-Risks.pdf. *See also* Elona Marku et al., *General Purpose Technology: The Blockchain Domain, Int. J. of Bus. and Mgmt.* (Oct. 2020), https://www.researchgate.net/publication/346557624_General_Purpose_ Technology_The_Blockchain_Domain.

2. *See* Marku et al., *supra* note 1.

3. PRIMAVERA DE FILIPPI, AARON WRIGHT, BLOCKCHAIN AND THE LAW 33 (2018).

4. Each node maintains a transaction record called a ledger, which acts as a new data structure on the Internet.

5. David Mills et al., Distributed Ledger Technology in Payments, Clearing, and Settlement, 10 (Fed. Rsrv. Bd. Fin. & Econ. Discussion Series, Working Paper No. 95, 2016).

information technology that facilitates global, programmatic, and online protocols.[6]

A. *Solana*

At the turn of the 20th Century, Thomas Edison and Nikola Tesla were competitively inventing new machines and processes to generate electric power.[7] Edison is famous for inventing the light bulb, but long forgotten is his plan to bring electricity to the world using a direct current.[8] Tesla invented a better model for electricidal transmission, an alternating current.[9] Where direct currents only flow in one direction, alternating currents flow in multiple directions, which increases both magnitude and transmission range.[10] Today the entire world runs on the alternating electrical current invented by Tesla, which now connects computers all around the world.

Just as early electrical transmission designs were divided into direct current and alternating current, blockchain technology is currently segmented into two essential models—the proof-of-work (PoW) blockchain and the proof-of-history (PoH) blockchain. The most prominent PoW blockchain is Bitcoin.[11] Much like Edison's light bulb, Bitcoin was a breakthrough technology.[12] However, much like the direct current technology underlying the light bulb, Bitcoin's PoW model does not scale. The major problem is that PoW requires expensive mining

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6. SATOSHI NAKAMOTO, BITCOIN: A PEER-TO-PEER ELECTRONIC CASH SYSTEM 8 (2008) ("The peer-to-peer network developed to solve the double spending problem, where the same digital token is spent more than once."); *see also* David Mills et al., Distributed Ledger Technology in Payments, Clearing, and Settlement, 10 (Fed. Rsrv. Bd. Fin. & Econ. Discussion Series, Working Paper No. 95, 2016).

7. Apparatus for The Electrical Transmission of Power, U.S. Patent No. 265,786 (filed Oct. 10, 1882); *see also* Electric Light, U.S. 219,628 (filed Sept. 16, 1879).

8. He wanted to power homes with the same direct current he used in the light bulb, but the problem was the direct current model couldn't scale. As such, Edison's design was limited to providing electricity within a few blocks of a power station.

9. Method of Converting and Distributing Electric Currents, U.S. Patent No. 382,282 (filed May 1, 1888); *see also* Pyromagnetic Electric Generator, U.S. Patent No. 428,057 (filed May 13, 1890).

10. Tesla's model crushed Edison's because the alternating current could scale.

11. *See* Satoshi Nakamoto, *Bitcoin: A Peer-to-Peer Electronic Cash System*, BITCOIN (2008), https://bitcoin.org/bitcoin.pdf [https://perma.cc/JJ6N-4YJQ]. *See also* SAIFEDEAN AMMOUS, THE BITCOIN STANDARD: THE DECENTRALIZED ALTERNATIVE TO CENTRAL BANKING (2018).

12. The PoW model relies on a complex cryptographic hashing algorithm for a process called mining, which is used to distribute new assets and incentivize network maintenance.

operations, which demand massive computing power and electricity consumption.[13]

The PoH model is necessary for custom compliance program creation to meet the specific needs of global and instantaneous information transfer at no cost. The best PoH blockchain is Solana. The Solana blockchain architecture is based on PoH, which is a computational proof for verifying order and temporal relationships.[14] In short, PoH is an innovation that allows for encoding trustless time-lapse on a distributed ledger. When used alongside a consensus algorithm such as proof-of-work (PoW) or proof-of-stake (PoS), PoH can reduce messaging overhead and enable faster transactions than previous blockchain mechanisms. As such, Solana offers an order of magnitude improvement in global payments and transactions cost-efficiency with its novel smart contract technology.[15]

B. *Open-Source Software*

Open-source software (OSS) is the best software. Open source innovation drives the edge across the industry, from information technology[16] to defense.[17] The general effect of creating an open-source license is to grant a free license while limiting liability for the holder without warranty.[18] For decentralized projects and startups, one idea behind open innovation is the creators of new ideas do not have to be within an organization to be helpful.[19] Solana has applied this principle to allow for the global development of the world's best high-performance blockchain.

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13. As a result, network maintenance for PoW blockchains is extremely expensive and economically inefficient. So, the cost for transactions is unnecessarily high and, in some instances, can cost hundreds of dollars for a single transaction.

14. ANATOLY YAKOVENKO, SOLANA: A NEW ARCHITECTURE FOR A HIGH, PERFORMANCE BLOCKCHAIN v0.8.13 (2022).

15. On Solana, smart contracts are a generalized term for transactions, or programs that run on nodes and modify the blockchain with transactional data.

16. Major open source in information technologies include Solana, Bitcoin, TensorFlow, Ethereum, Selenium, React, Python, and React.

17. *See* youshixun, *Versatile model of cognitive electronic warfare with countermeasures*, GITHUB (2019), https://github.com/youshixun/vCEW [https://perma.cc/A87T-VES7]; *see also* Shixun You et al., *Completing Explorer Games with a Deep Reinforcement Learning Framework Based on Behavior Angle Navigation*, ELECTRONICS 17 (2019), https://www.mdpi.com/2079-9292/8/5/576 [https://perma.cc/8AWN-SDDQ].

18. Heli Koski, *OSS Production and Licensing Strategies of Software Firms*, 2 REV. ECON. RSCH. ON COPYRIGHT ISSUES 111, 117 (2005) (explaining OSS is often attractive because it introduces software for free which makes it easier to establish a large user base and increase revenue from complementary service provisions).

19. JOHN PALFREY, INTELLECTUAL PROPERTY STRATEGY 107 (2011); *see also* PETER THIEL, ZERO TO ONE 129 (2014).

More generally, OSS has many advantages compared to proprietary software development.[20] For example, OSS can also be extremely helpful for developing secure code because the public nature of the product allows anyone to report bugs or issues. OSS also serves as a public good by advancing human knowledge in science, technology, and innovation. Moreover, OSS develops contributions from a global talent pool of diverse inventors, creators, and engineers. According to Stanford Law Fellow Fernando Morera, organizations need to collaborate within decentralized ecosystems to be effective and maximize knowledge and value.[21]

OSS is a keystone to Solana's ability to be able to innovate and invent new technologies. Solana is an open-source and decentralized blockchain built for optimal performance.[22] In fact, Solana's development of OSS is a public good that creates transparency for global finance. The Solana Foundation, which maintains the Solana OSS code base, solves this problem by incentivizing developers with grants to support the public good and open innovation. This helps to correct the common economic and opportunistic inequality in institutional technology development.

The two most prominent open-source licenses the Solana Network uses are the Apache and the MIT License. In fact, these two licenses are the most used licenses on the Solana Foundation GitHub.[23] The Apache License expressly offers the software—as is and without warranty.[24] Interestingly, the MIT License is relatively similar in structure because, like the Apache License, the MIT License grants a license to use the technology while limiting liability for the copyright holder.[25] However, one main difference between the two licenses is that the Apache License is expressly irrevocable, meaning that it is permanent once the invention is disclosed.[26] Solana's open-source strategy, software, and licenses are enabling a robust ecosystem of layer-2 applications to flourish on Solana.

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20. *See* Jeanne C. Fromer, *Machines as the New Oompa-Loompas: Trade Secrecy, the Cloud, Machine Learning, and Automation*, 94 N.Y.U. L. REV. 706, 708 (2019) ("This Article argues that, in light of the technological shifts in computing, the incentives that trade secret law currently provides to develop these contemporary Oompa-Loompas are excessive in relation to their worrisome effects on follow-on innovation and competition by others.").

21. Fernando Morera, *Governing Open Innovation – A Transatlantic Perspective*, STANFORD LAW SCHOOL, https://law.stanford.edu/projects/governing-open-innovation-a-trans atlantic-perspective/ [https://perma.cc/53WL-HFUA] (last visited Nov. 5, 2022).

22. *Introduction*, SOLANA DOCUMENTATION, https://docs.solana.com/introduction [https://perma.cc/29D2-B2YC] (last visited Nov.21, 2022).

23. Solana Labs, GitHub (2022), https://github.com/orgs/solana-labs/repositories [https://perma.cc/RQ54-QBL8].

24. *Apache License, Version 2.0* (2004), THE APACHE SOFTWARE FOUNDATION, http://www.apache.org/licenses/LICENSE-2.0 [https://perma.cc/4YMP-M4L9].

25. *The MIT License*, OPEN SOURCE INITIATIVE, https://opensource.org/licenses/MIT [https://perma.cc/3RAP-J7PT] (last visited Nov. 21, 2022).

26. *Apache License, Version 2.0*, *supra* note 24, at §§ 2–3.

C. *SPL Tokens*

SPL tokens are Solana layer-2 tokens typically associated with applications on Solana. For example, mSOL is a staked asset associated with value increases proportional to Solana staking rewards.[27] Another example is ORCA,[28] an SPL token that governs the Orca decentralized exchange.[29] On the decentralized protocol, users supply tokens in liquidity pools, allowing algorithms to set prices based on supply and demand. The ORCA asset is used for various purposes in DeFi and for governance and voting on future protocol development.[30] Below, Figure 1 is a list of select SPL tokens, with data regarding asset supply and market capitalization.

Figure 1[31]

Asset	Name	Total Supply	Total Market Capitalization
Solana	SOL	511,616,946.00	$21,721,850,558.00
Orca	ORCA	99,999,998.70	$83,365,598.92
Green Satoshi Token	GST	68,730,903.87	$110,658,502.00
GenesysGo Shadow	SHDW	199,999,997.36	$146,709,722.00
Samoyedcoin	SAMO	7,236,693,918.49	$47,227,829.00
Nova Finance	NOVA	9,999,999.82	$8,789,762.00
Serum	SRM	9,992,475,560.59	$10,092,400,316.20
StepN	GMT	5,872,455,632.91	$5,713,984,262.00
Star Atlas DAO	POLIS	359,999,998.74	$217,475,968.00
Raydium	RAY	554,999,996.00	$561,158,653.00
Step Finance	STEP	4,000,000.00	$94,193,278.00
Dust Protocol	DUST	15,999,947.71	$40,319,868.23
MonkeyBucks	MBS	999,999,985.09	$78,341,998.83
Learning Star	LSTAR	400,369,233.00	$8,007,384.66
Solend	SLND	99,999,999.96	$114,999,999.95
Larix	LARIX	9,999,999,420.72	$16,783,399.02
Solice	SLC	399,999,999.86	$44,013,999.98

27. *Marinade*, GITHUB, https://github.com/marinade-finance [https://perma.cc/C6VV-L376] (last visited Nov. 21, 2022) (defining mSOL as a type of collateralized asset developed by Marinade and a DAO that makes Solana more decentralized and capital efficient through liquid staking).

28. *Trader FAQs*, ORCA (2022), https://docs.orca.so/orca-for-traders/master [https://perma.cc/K5BJ-DCVR] (last modified Oct. 31, 2022).

29. *Id.* (discussing how Orca enables near-instant token swaps using an automated market maker model).

30. OrcaORCA, COINBASE, https://www.coinbase.com/price/orca [https://perma.cc/ACW6-GM25] (last visited Nov. 21, 2022).

31. COINBASE, https://www.coinbase.com/ (last visited Nov. 21, 2022) (data gathered between 05/28/22 and 07/22/22).

| Oxygen | OXY | 10,000,000.00 | $576,182,932.00 |
| Only1 | LIKE | 500,000,000.00 | $15,548,737.00 |

One great advantage of SPL tokens is the fact that SPL tokens have consistently partnered with Coinbase, a leading centralized exchange with multiple SEC approvals, including a public offering of equities.[32] These partnerships are largely possible due to Solana's trusted technology and reputation for blockchain business and ethics excellence. In fact, Solana's accelerating growth in the market is largely due to both brilliant tokenomics and robust business development on the network. As such, SPL tokens make Solana a great place for entrepreneurs and a public good for economic opportunity.

II. SECURITIES

Broadly, there are two main types of securities: debt and equity. The SEC website includes six types of securities: stocks, membership interests, stock options, restricted stock units, convertible instruments, and debt.[33] However, digital assets, cryptocurrencies, or blockchains are not listed among these six securities. This Part explores securities in the context of blockchain regulation, enforcement, and policy.

A. *Regulation*

Securities are financial instruments that represent an interest in equity or debt. The Securities Act of 1933 defines *Security* in the following way,

> (1) The term "security" means 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,

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32. *Id.*

33. *What different types of securities are issued to startup investors?*, SEC (2022), https://www.sec.gov/education/capitalraising/building-blocks/startup-securities [https://perma.cc/AVU8-VLRN] ("Many startups and investors refer simply to equity or an ownership interest in a company.").

temporary or interim certificate for, receipt for, guarantee of,
or warrant or right to subscribe to or purchase, any of the
foregoing.[34]

The definition includes thirty total financial instruments as securities. Of course, digital assets are not one of them. Thus, only when a digital asset is used primarily as a security does it fall under the scope of SEC regulation.[35] Most analyses of digital assets as securities focus on a seminal case in securities law, *Securities and Exchange Commission v. W.J. Howey Co.* (*Howey*).[36]

In American Jurisprudence, *Howey* established the principle that:

The test of an investment contract within [the] Securities Act is whether [the] scheme involves an investment of money in a common enterprise with profits to come solely from the efforts of others, and, if the test is satisfied, it is immaterial whether the enterprise is speculative or nonspeculative or whether there is a sale of property with or without intrinsic value.[37]

In other words, the holding in *Howey* establishes over seven decades of precedent that guarantee digital assets, such as Solana, Bitcoin, and Ethereum, are not inherently securities under U.S. Law—and that there are limits on the SEC's power. The SEC does take securities fraud and unregistered offerings seriously in the context of digital assets. However, its enforcement agenda is far too focused on aggrandizing the scope of its regulatory authority rather than prosecuting legitimate legal violations, which results in exceptional financial waste within the agency.

B. *Enforcement*

SEC allegations against unregistered offerings have increased in the past two years, both in litigation and administrative actions.[38] Much of

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34. 15 U.S.C. § 77(b) (2022).

35. *See* Fernando Morera, Central Bank Digital Currencies – Recent Transatlantic Developments, STANFORD-VIENNA TRANSATLANTIC TECHNOLOGY LAW FORUM NEWSLETTER (Apr. 16, 2021), https://ttlfnews.wordpress.com/2021/04/16/central-bank-digital-currencies-recent-transatlantic-developments/ [https://perma.cc/N6VT-5G3Q] (explaining that one way regulation might work is if there was a regulated CBDC, while digital assets remained unregulated by law. CBDC is a "…form of digital money, intended to have both currency and legal tender status, which is issued, backed, and governed by central banks…").

36. SEC v. W.J. Howey Co., 328 U.S. 293 (1946).

37. *Id.* (citing 15 U.S.C. § 77b (2022) ("An 'investment contract', as used in the Securities Act, means a contract, transaction, or scheme whereby a person invests his money in a common enterprise and is led to except profits solely from the efforts of [a] promoter or a third party. . . .").

38. Cornerstone Research, SEC Cryptocurrency Enforcement: 2021 Update 8 (2021), https://www.cornerstone.com/wp-content/uploads/2022/01/SEC-Cryptocurrency-Enforcement-2021-Update.pdf [https://perma.cc/B8BD-D4HW].

the focus for the SEC's enforcement is on initial coin offerings (ICOs),[39] a fundraising technique involving exchanging cryptocurrency for digital assets.[40] What differentiates ICOs from other token offerings is that tokens sold through an ICO represent an equity interest in a company and are thus more likely to be both an investment and a security.[41] More broadly, the SEC continues making allegations and engaging in civil litigation with blockchain software projects across the decentralized Internet.

For example, in December 2020, the SEC sued Ripple Labs bringing allegations the Ripple cryptocurrency (XRP) was sold as an unregistered security.[42] The civil action involved the SEC making a claim for $1.3 billion in damages from Ripple. While XRP is a layer-1 digital asset and is not inherently a security, given that certain XRP tokens were allegedly sold as securities, the SEC chose to prosecute the case as a plaintiff. The key reason the SEC chose to bring a lawsuit against Ripple was that the SEC alleged Ripple raised $1,388,227,062.70 from sales of XRP to institutional investors.[43] If the SEC's allegations are proven true, then the SEC must also prove that XRP is, in fact, a security, which is highly unlikely given the asset's clear purpose and use of the Foundation for distributed ledger technology. Even if Ripple did sell XRP as a security to institutional investors, XRP is still not a security as a matter of law.

Similarly, in March 2021, the SEC brought allegations against LBRY, Inc., for an unregistered securities offering pursuant to the Securities Act.[44] The complaint alleged that LBRY, Inc. sold LBRY Credits (LBC)[45] to fund LBRY, an Ethereum project offering a free, open, and community-run digital marketplace.[46] The project uses LBC to power its

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39. Cornerstone Research, SEC Cryptocurrency Enforcement: 2021 Update 9 (2021), https://www.cornerstone.com/wp-content/uploads/2022/01/SEC-Cryptocurrency-Enforcement-2021-Update.pdf [https://perma.cc/L7PL-UTMV].

40. *Id.*

41. In such a case, the company is offering coins as a security. See Edward O. Thorp, A Man for All Markets 301 (2017) ("Derivative securities, which include warrants, options, convertible bonds, and many later complex inventions, derive their value—as we have seen—from that of an "underlying" security such as a common the common stock of a company.").

42. Complaint at 1, SEC v. Ripple Labs, Inc., No. 1:20-cv-10832 (S.D.N.Y. Dec. 22, 2020) ("From at least 2013 through the present, Defendants sold over 14.6 billion units of a digital asset security called 'XRP,' in return for cash or other consideration worth over $1.38 billion U.S. Dollars ('USD'), to fund Ripple's operations and enrich Larsen and Garlinghouse. Defendants undertook this distribution without registering their offers and sales of XRP with the SEC as required by the federal securities laws, and no exemption from this requirement applied.").

43. *Id.* at 20.

44. SEC v. LBRY, Inc., Civ No. 1:21-cv-00260 (D.N.H. Mar. 29, 2021).

45. *See* LBRY Credits, COINMARKETCAP, https://coinmarketcap.com/currencies/library-credits/ [https://perma.cc/ZPG7-23UK] (last visited May 5, 2022).

46. *See* LBRY, https://lbry.tech/ [https://perma.cc/PG9W-EAZV] (Oct. 31, 2022, 8:03 PM).

decentralized platform and support open-source software development predominantly provided to the public under the MIT License.[47]

The SEC alleged in its complaint that key facts include: (1) LBRY, Inc. offered LBC to institutional investors at a discount to the secondary market trading price, and (2) LBRY, Inc. made multiple direct sales of LBC to several investment funds.[48] LBRY allegedly received more than $11 million in U.S. dollars,[49] but this is unlikely because the total of LBC tokens, which are speculatively worth approximately $18 million total,[50] would not yield nearly $11 million in capital income as investments.[51] Still, according to the SEC, LBCs were offered and sold as investment contracts and, therefore, as securities without first registering with the federal government.

In March 2022, the SEC alleged the creators of Ormeus Coin "acted as modern-day snake oil salesmen, using social media, promotional websites, and in-person roadshows to mislead retail investors for their own personal benefit."[52] Ormeus Coin is an Ethereum asset using the ERC20 standard and is marketed as a "new digital money system backed by a fully audited industrial crypto-mining operation."[53] In this case, the allegations included deceptive fraud in addition to an unregistered offering. According to the SEC, "…the defendants falsely stated that Ormeus Coin had a $250 million crypto mining operation and was producing $5.4 million to $8 million per month in mining revenues."[54]

The complaint alleged John and JonAtina Barksdale, the Ormeus creators, defrauded retail investors out of approximately $124 million through two unregistered and fraudulent offerings of Ormeus Coin.[55] In

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47. GitHub LBRY (2022), https://github.com/lbryio [https://perma.cc/CCF9-7PLQ]; *see also* Mass. Inst. of Tech. The MIT License, Open Source Initiative (2021), https://opensource.org/licenses/MIT [https://perma.cc/PDM8-7X3B].

48. Complaint at 2, SEC v. LBRY, Inc., 26 F.4th 96 (1st Cir. 2022) (No. 1:21-cv-00260).

49. *Id.*

50. LBRY Credits, *supra* note 45.

51. For example, even if some LBC tokens were sold as securities, it is unlikely all the LBC were sold as securities or in the same way. For example, given that LBC is on several exchanges and other decentralized protocols, at least some LBC must have been used as a market efficiency mechanism by arbitrage bots and, therefore, would not function as a security. Similar developer payments or rewards allow for active participation in the network and fail the *Howey Test* because there is no promise of profits from the efforts of a promoter when the user must actively engage to earn value.

52. SEC v. Barkdale and Barkdale, No. 1:22-cv-01933 (S.D.N.Y Mar. 8, 2022).

53. *See* ORMEUS COIN (May 5, 2020), https://ormeuscoin.com/ [https://perma.cc/A6EN-XPT6].

54. SEC Press Release, *SEC Charges Siblings in $124 Million Crypto Fraud Operation that included Misleading Roadshows, YouTube Videos*, SEC (Mar. 8, 2022), https://www.sec.gov/news/press-release/2022-37 [https://perma.cc/RKE3-VFZL].

55. Complaint at 3-4, Securities and Exchange Commission v. Barkdale and Barkdale, No. 01933 (S.D.N.Y Mar. 8, 2022), https://www.sec.gov/litigation/complaints/2022/comp-pr2022-37.pdf [https://perma.cc/G92X-7TCR].

addition to the civil penalties sought by the SEC, criminal charges were also brought in a parallel action by the United States Department of Justice (DOJ) against John Barksdale in this case.[56] Of 95 total enforcement actions sampled until May of 2022, 82 were only civil, 2 were criminal and 11 involved both civil and criminal charges.[57]

Importantly, not all digital assets are securities. In a June 2018 statement, the SEC declared that Bitcoin and Ethereum were decentralized enough, such that neither BTC nor ETH were considered securities.[58] Figure 2 graphs SEC blockchain-related enforcement actions by year.

Figure 2[59]
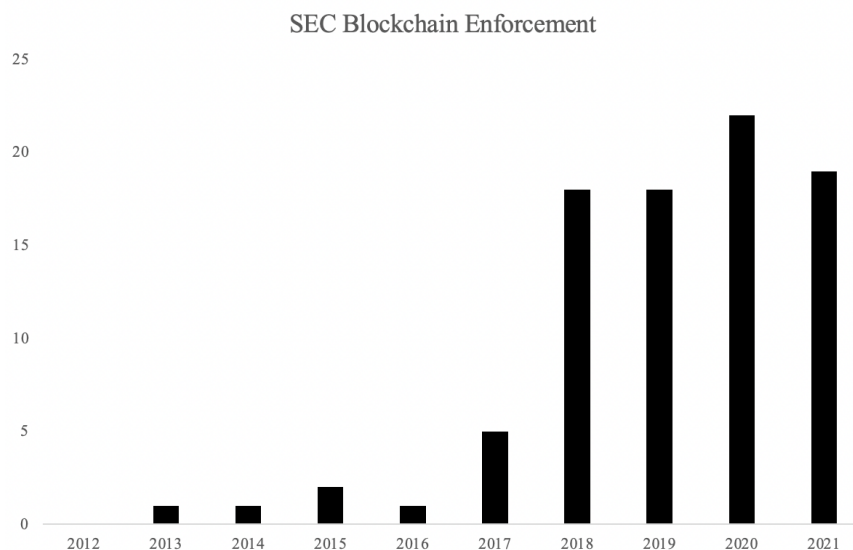
One goal for an effective compliance policy for cryptocurrencies is to use the public information available regarding enforcement actions to proactively structure an asset to distinguish it from assets the SEC alleges

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56. Complaint, United States v. Barksdale, No. 00684 (S.D.N.Y Mar. 8, 2022), https://www.justice.gov/usao-sdny/press-release/file/1480836/download [https://perma.cc/RX4 G-EF59]; *see also* SEC Press Release *supra* note 54, https://www.sec.gov/news/press-release/2022-37 [https://perma.cc/T57Q-ZPA7].

57. ChoiceCoin, Solana-Compliance, GITHUB (2022), https://github.com/ChoiceCoin/ Solana-Compliance/blob/main/Database/Enforcement/SecuritiesEnforcement.xlsx [https://perma .cc/ULQ3-9TFP] (follow "View raw" hyperlink).

58. William Hinman, Director, Div. of Corp. Fin., Speech, *Remarks at the Yahoo Finance All Markets Summit: Crypto*, SEC (June 14, 2018), https://www.sec.gov/news/speech/speech-hinman-061418 [https://perma.cc/DL5X-66UD].

59. ChoiceCoin, *supra* note 57.

are securities.[60] For example, consider the different factors between Bitcoin and Ormeus Coin to better understand the law and inform policy.

C. *Policy*

Probably the biggest policy challenge for regulating digital asset securities[61] is defining the word security.[62] Most digital assets are not securities because most digital assets do not produce any profits solely from the efforts of others and often lack a common enterprise. In the case of decentralized assets not on a centralized exchange, any profits coming from the asset are only derivable from active participation in a decentralized protocol.[63] As another example, the types of characteristics measured in decentralization, such as supply, token distributions, and liquidity, are extremely volatile and vary greatly in relation to the existence of a common enterprise.

Defined digital asset securities are only those assets that represent an equity interest in a company or common enterprise and are sold as investments. By contrast, non-security digital assets are any intentionally decentralized assets intended for use within a product or service or operating as a cryptographic key. Clearly defining non-security tokens as assets not regulated by the SEC will ensure that opportunities can remain for open-source software projects developing blockchain technologies and digital assets.

Most digital assets should not be considered securities because they are not what we typically ascribe to the word security, such as a stock or a mortgage. Instead, digital assets are new technologies with a plethora of properties separate and apart from financial investments.[64] One of the key things that differentiates digital assets from securities is that digital assets can maintain their value irrespective of price.[65] This is because all

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60. Jurisdiction may provide an important part of a compliance analysis, whether a project is domestic, foreign, or even what state or Federal Circuit a project principally operates because federal law is not static across the country when some Courts are legislating from the bench on behalf of the SEC. For Enforcement actions by SEC office, see Appendix B.

61. There are two types of securities: equities and debt. More generally, most cryptocurrencies and digital assets are not securities, money, or debt. Instead, this new asset class is something completely new that cannot be forced e*x post* into an existing framework of legal analysis.

62. Lummis-Gillibrand Responsible Financial Innovation Act, S.4356, 117th Cong. (2022) (defining ancillary assets, a new class of assets, as a specific type of security token having additional properties that yield additional regulation).

63. This is a lot of work and not consistent with traditional conceptions of securities, such as buying stock—which can be inherently passive.

64. It's imperative this reality is respected by the Bill and any new law on the subject.

65. For example, if you buy a stock in $MSTR at 281.92 and sell it at 282.92, then you made one dollar and if you sell at $280.92, then you lost one dollar. However, with digital assets, if you buy $BTC at $22,010.10, your gains or losses are just as much dependent on what you do with your $BTC as they are the price of the asset.

digital assets are potentially revenue-producing assets, independent of price.[66]

One problem is that the SEC has a financial interest in arguing that most digital assets are securities.[67] The more the SEC has authority to regulate, the more money Congress will appropriate to the agency, but SEC spending is already out of control. Figure 3 shows the annual spending by the SEC. Between 2011 and 2021, the SEC overspent on its congressionally appropriated funds by more than 275 million dollars.[68]

Figure 3[69]
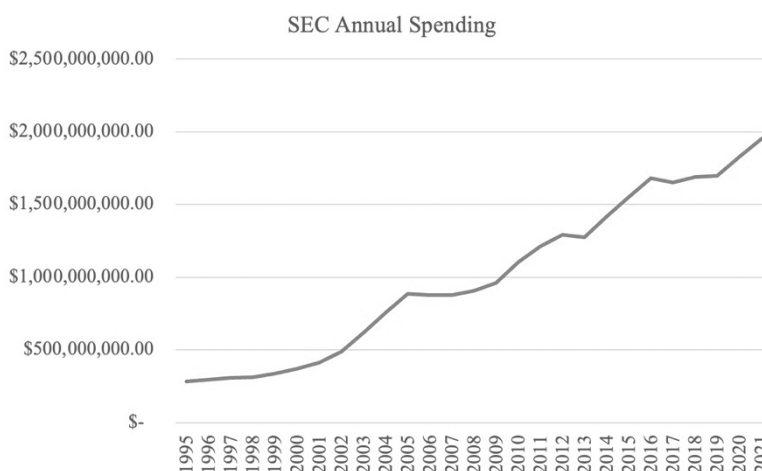
Still, despite holding positions of public service, SEC employees reap a fortune through annual compensation. For example, in the year 2020, the SEC had 4,495 employees with an average salary of $200,613.09 among all employees, not including paid time off and full benefits.[70]

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66. For example, staking is a method for decentralization rather than a promise of profits because it helps distribute the asset fairly across a network. Instead, the network and the asset are decentralized in control, use, and development. Thus, there is no common enterprise.

67. U.S. Sec. & Exch. Comm'n, Fiscal Year 2023 Congressional Budget Justification and Annual Performance Plan; Fiscal Year 2021 Annual Performance Report (Mar. 28, 2022),https://www.sec.gov/cj [https://perma.cc/35F3-GMYL] (last modified July 21, 2022).

68. *Id.*

69. U.S. Sec. & Exch. Comm'n, Budget History—BA vs. Actual Obligations ($ in 000s), https://www.sec.gov/foia/docs/budgetact [https://perma.cc/XT6Y-S3TP] (last modified Nov. 3, 2019).

70. U.S. Sec. & Exch. Comm'n, Securities and Exchange Commission Salaries of 2020, https://www.federalpay.org/employees/securities-and-exchange-commission.

By arguing that more things are securities, such as digital assets, the SEC hopes to increase its authority and budget.[71] Unsurprisingly, the SEC cites regulating digital assets to support requesting a budget increase for 2023 to a total of over $2.17 billion.[72] Yet, security tokens are actually few and far between.[73] The SEC should be incentivized to reduce spending rather than increase spending. Moreover, the SEC should be incentivized to respect and promote the public good rather than its own bottom line.

Open-source software[74] is a public good.[75] Open innovation is a fundamental phenomenon that drives blockchain technology. Moreover, the transition from proprietary financial technology to open-source financial technology on blockchains serves the public by promoting financial transparency. Moreover, using a public ledger for asset dissemination provides a major combatant against rampant government agency fraud, abuse, and wasteful spending.[76] Thus, the open nature of blockchain technology is a critical public good.

A major part of the Solana Foundation's mission is the development of open-source software projects, which benefit the public by providing open, transparent, and affordable access to financial technologies and innovation. In fact, Solana is the largest open-source blockchain not based on proof-of-work technology. This adds additional public benefit

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71. But the collective is a network of individuals with their own respective interests and motivations. *See* Mancur Olson, The Logic of Collective Action 7 (1971) (arguing the State's members often have interests separate and apart from the people).

72. U.S. Sec. & Exch. Comm'n, Fiscal Year 2023 Congressional Budget Justification and Annual Performance Plan; Fiscal Year U.S. Sec. & Exch. Comm'n, Fiscal Year 2021 Annual Performance Report (Mar. 28, 2022), https://www.sec.gov/files/FY%202023%20Congressional %20Budget%20Justification%20Annual%20Performance%20Plan_FINAL.pdf [https://perma. cc/UP33-M4JC].

73. Only digital assets offered through an express ICO should be considered security tokens. An ICO is a specific type of action where a project backs a new asset with equity and then sells the asset to the public. Very few projects use an ICO, and they are generally vulnerable to much higher regulatory scrutiny for good reason. In fact, most projects decentralize assets through other mechanisms, removing any common enterprise or any expectation of profit.

74. Often, open-source software projects evolve on the decentralized Internet to build applications.

75. The two most abundant licenses for open-source software on the Solana Network are the Apache License and the MIT License. *See* The MIT License, *supra* note 47; *see also* Apache License, Version 2.0 (2004), http://www.apache.org/licenses/LICENSE-2.0 [https://perma.cc /Q3MF-8K9M].

76. Craig Whitlock, Bob Woodward, Pentagon Buries Evidence of $125 Billion in Bureaucratic Waste, Wash. Post (Dec. 5, 2016), https://www.washingtonpost.com/investiga tions/pentagon-buries-evidence-of-125-billion-in-bureaucratic-waste/2016/12/05/e0668c76-9af6 -11e6-a0ed-ab0774c1eaa5_story.html [https://perma.cc/EZ7W-T32F]; *see also* NATO, Defense Expenditure of NATO Countries (2012-2019) (June 25, 2019), https://www.nato.int/nato_static_ fl2014/assets/pdf/pdf_2019_06/20190625_PR2019-069-EN.pdf [https://perma.cc/FP4E-VLKN].

because proof-of-work blockchains are notoriously less energy-efficient and environmentally friendly.

There should be a presumption of non-security for open-source software projects. In other words, it should be the SEC's burden to prove an asset is a security in civil court. Moreover, that burden should be beyond a reasonable doubt given that, in many cases, the federal government is suing a private citizen or small business.[77] This would allow for open innovation to persist and protect decentralized projects, developers, and entrepreneurs from unnecessary regulatory risk and illegitimate enforcement. At the same time, it would allow the SEC to focus its efforts on only those digital assets that are securities and where actual fraud occurs.

With respect to code, open-source software programs using digital assets for various purposes or in a decentralized way are also a public good. Open-source software projects forgo the ability to drive high-profit margins from proprietary software development and instead focus on product creation for the public good. Most open-source projects are also decentralized because anyone around the world can contribute. Additionally, assets associated with open-source projects are more likely to be used as tools rather than passive investments. Moving forward, legislation for blockchain technologies should respect the confluence of open-source software and the public good.[78]

III. APPLIED COMPLIANCE

Compliance is a process by which companies follow the law. *The Compliance Process* distills the corporate compliance function to foundational formalism.[79] In doing so, Duke Law Professor Veronica Root Martinez "demonstrates how focusing on process reforms will allow complex organizations to adopt more integrated and complex compliance programs that are better equipped to address corporate misconduct."[80] Compliance is important for blockchain projects and startups. This Part applies compliance to analyze various assets on the Solana blockchain from a securities perspective. Additionally, this Part discusses digital assets with respect to ethics, scalable use, and the role of regulation.

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77. In fact, the SEC does not have the authority to prosecute individuals criminally and instead works with the DOJ to prosecute certain cases of Fraud criminally.

78. The most recent legislation relating to blockchain technology is the Lummis-Gillibrand Responsible Financial Innovation Act, which was introduced to the Senate Finance Committee by Senators Lummis and Gillibrand. *See* S. 4356, 117th Cong. (2022).

79. Veronica Root, *The Compliance Process*, 94 IND. L.J. 203 (2019), https://papers.ssrn.com/sol3/papers.cfm?abstract_id=3151893 [https://perma.cc/5EBC-NJF3] (reasoning that fundamental principles about the role compliance plays within the firm to create a formative model for organizational excellence).

80. *Id.*

A. *Legal Informatics*

Legal informatics is an approach to law based on information theory. Both a method of practice and theory, legal informatics focuses on the confluence of computer science and the law. The idea is to build information systems that improve law practice in terms of time, accuracy, and efficiency. In theory, legal informatics provides means for statistical analysis of the law through natural language processing to help address fundamental issues in jurisprudence, such as defining law and understanding the basic linguistic mechanisms underpinning law practice. Harvard Law Fellow Ron Dolin argues one method of formalizing human intuition in decision-making is a weighted geometric mean.[81]

Whether an asset is a security or non-security asset depends on various factors and proper analysis of certain attributes associated with the asset. Using legal informatics for securities compliance, the analysis may be conducted using defined variables. The variables may be weighted and processed to produce probabilistic measurements. Measurements may correspond with a number between 0 and 1, where an asset with a score of 1 is statistically unlikely to be a security, and an asset with a score of 0 is likely to be a security.

<div align="center">

Equation 1

$$compliance\_score = \sqrt[\Sigma_{j=1}^{n} W_j]{\prod_{i=1}^{n} F_i^{W_i}}$$

</div>

In Equation 1, the compliance factors F_i may be assigned based on various features for a specific asset or regulatory corpus. For example, one factor to consider may be utility because if a cryptocurrency is used for governance or voting, it is almost certainly not a security token.[82] For purposes of applied analysis on Solana, the following nine factors were used to calculate the probability certain SPL tokens would be considered securities.

1.   Equity: An asset is less likely to be a security if it does not represent an equity interest in a company.

2.   Decentralization: An asset is less likely to be a security if it is decentralized.

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81.   Ron A. Dolin, *Measuring Legal Quality*, HARV. L. SCH., CTR. ON THE LEGAL PRO. (June 18, 2017), https://papers.ssrn.com/sol3/papers.cfm?abstract_id=2988647 [https://perma.cc/U2 JZ-5AL3].

82.   Similarly, if a token is backed by or tied to the value of another asset and pays dividends to investors, then the token is likely a security. Factors may also take account of existing legal frameworks for securities analysis—for example, a scorecard approach. *See* Cryptocurrency Rating Council, About Our Asset Rating Framework, Importance of the Howey Test for Classifying Digital Assets (2021), https://www.cryptoratingcouncil.com/framework.

3.   Participation: An asset is less likely to be a security if users earn the asset through participation.

4.   Investment: An asset is less likely to be a security if it is not marketed or sold as an investment.

5.   Utility: An asset is less likely to be a security if it has a specific utility.

6.   Purpose: An asset is less likely to be a security if the asset has an intended purpose for use aside from financial return.

7.   Control: An asset is less likely to be a security if the asset gives the user control over an organization's decision-making.

8.   Derivatives: An asset is less likely to be a security if it does not offer users derivatives or cash returns.

9.   Commonality: An asset is less likely to be a security if it is not dedicated to the furtherance of a common enterprise.

The algorithm may be applied using a cognitive computing framework,[83] a collaborative process allowing humans and computers to perform the kinds of intelligent activities that they perform best.[84] The basic idea provides a means for cognitive information manipulation, which is required for commonsense reasoning.[85]

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83.   Jeanne C. Fromer, *Machines as the New Oompa-Loompas: Trade Secrecy, the Cloud, Machine Learning, and Automation*, N.Y.U. L. Rev., 706, 720 (2019), https://papers.ssrn.com/sol3/papers.cfm?abstract_id=3359746 [https://perma.cc/N9YE-P723] ("In recent years, these techniques have been among the most successful and prominent ways of imbuing computers with artificial intelligence, or human-like cognitive abilities."). *See also* Emily Berman, *A Government of Laws and Not of Machines*, 98 B.U. L. Rev. 1277, 1278 (2018), https://papers.ssrn.com/sol3/papers.cfm?abstract_id=3098995 [https://perma.cc/5FEV-85TV] (Machine learning is a strand of artificial intelligence that sits at the intersection of computer science, statistics, and mathematics, and it is changing the world.).

84.   Dean Alderucci, *The Automation of Legal Reasoning: Customized AI Techniques for the Patent Field*, 58 Duq. L. Rev. 73, 74 (2020); *see also* Olga Russakovsky et al., *Best of both worlds: human-machine collaboration for object annotation*, "IEEE Xplore" (2015), https://ieeexplore.ieee.org/document/7298824 [https://perma.cc/X673-WV4L]; Kevin D. Ashley, Artificial Intelligence And Legal Analytics: New Tools For Law Practice In The Digital Age 22 (2017).

85.   David Lehr & Paul Ohm, *Playing with the Data: What Legal Scholars Should Learn About Machine Learning*, 51 U.C. Davis L. Rev. 653, 717 (2017) (explaining collaboration between lawyers and technologists will be key for tackling some of the most intractable problems at the juncture of law and Machine Learning).

Figure 4[86]

Project	Asset Name	Compliance Score[87]
Solana	SOL	0.84
Marinade	mSOL	0.84
Orca	ORCA	0.78
Serum	SRM	0.78
Raydium	RAY	0.75
Solice	SLC	0.64
Oxygen	OXY	0.63

Here, the algorithm may be used to assess the compliance of SOL, the Solana layer-1 asset, and SPL Tokens. The human expert must analyze and process each factor and make an expert scoring.

Figure 5

Assessment	Range	Explanation
Minimal risk	0.77 +	Strongest level of compliance.
Mild risk	0.61 – 0.76	Satisfactory level of compliance.
Moderate Risk	0.44 – 0.60	Mild risk of illegal activity or lacking in compliance mechanisms.
High Risk	0.00 – 0.43	Moderate to severe risk of illegal activity, no compliance mechanism, or other critical failure.

Figure 5 provides interpretive guidance for compliance score calculations and analysis. Moreover, the guidance allows for further ordinal categorization of projects from a securities compliance perspective. Still, all organizations should strive for organizational excellence in both compliance and ethics.

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86. Choice Coin, Solana-Compliance, Software, v1, GitHub (2022), https://github.com/ChoiceCoin/Solana-Compliance/blob/bce4bcb05f24381c158bed7dbd6bea6e4145365b/Software/v1/SolanaStatisticalCompliance.py [https://perma.cc/UH24-9NHP] (the software algorithm is available on an open-source basis under the Apache License on GitHub).

87. All scores are estimates for academic purposes only.

2023]

B. *Ethics*

All else being peripheral, projects need to intend to follow the law and run their operations the right way. An honest commitment to ethics is critical to developing effective compliance mechanisms. Ethics are principles governing human behavior.[88] The study of ethics[89] is inherently limited by the subjective nature of personal ethics.[90] Indeed, what one person finds to be unethical may be considered entirely appropriate by another.[91] The evolution of ethical norms across the decentralized Internet is progressing at slower rates, which are in part dependent on ideological shifts supporting stronger ethical codes.[92]

One important ethical consideration is that of public waste due to the high costs associated with enforcement.[93] Regulation stifles competition by picking winners and losers based on capital allocations but does not yield a net public good because blockchain regulation otherwise falls under the Law of the Horse.[94] Moreover, additional regulation would likely stifle opportunity, not only for development but also for decentralizing economic freedom.[95]

Another important ethical consideration is the development of compliance and ethics programs on decentralized projects across the World Wide Web. The fact is that projects with ethics and compliance programs will put both the organizational and software infrastructure in place to succeed over the long hall. Perhaps one of the most amazing things about blockchain technology is that the decentralized network is *de facto* immutable. Given the importance of blockchain technology, a bedrock to building every project should be professionalism, compliance, and ethics.

Professor Veronica Root Martinez is a zealous advocate for moral and ethical courage in compliance. In *More Meaningful Ethics*, she argues for reconceiving the role ethics plays in modern business.[96] As explained,

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88. Thomas M. Madden, *Law and Strategy and Ethics?*, 32 GEO. J. LEGAL ETHICS 181, 200 (2019) (discussing law firm competition).

89. Alternatively, ethics are more often used as a justification for maintaining socio-economic order.

90. Veronica Root Martinez, *More Meaningful Ethics*, U. CHI. L. REV. ONLINE 1, 3 (2020) [hereinafter Martinez, *More Meaningful Ethics*].

91. *Id.* at 6.

92. MARYAM JAMSHIDI, THE FUTURE OF THE ARAB SPRING: CIVIC ENTREPRENEURSHIP IN POLITICS, ART, AND TECHNOLOGY STARTUPS, 27 (2014).

93. Veronica Root Martinez, *Coordinating Compliance Incentives*, 102 CORNELL L. REV. 1003, 1029 (2017) (discussing regulatory agencies deficiencies in information and coordination).

94. Lawrence Lessig, *The Law of the Horse: What Cyberlaw Might Teach*, 113 HARV. L. REV. 501 (1999).

95. *See generally id.* ("The argument so far is that law can change the constraints of code, so that code might regulate behavior differently.").

96. Martinez, *More Meaningful Ethics*, *supra* note 90, at 54.

some legal scholars speculate ethics and compliance are separate and distinct concepts with a gray boundary.[97] However, Professor Martinez goes further, exploring perspectives on ethical relativism.[98]

Professor Martinez argues for developing ethical infrastructures within firms, promoting a more moral corporate culture.[99] Indeed, she contends firms should not retreat from difficult ethical dilemmas but rather should engage directly by implementing specific and explicit ethical infrastructures. Moreover, she recognizes the necessity for custom compliance program creation to meet the specific needs of each unique firm.[100] This is particularly true when developing ethical and compliant practices on blockchains.

The process of creating an ethical infrastructure may not be easy, but given persistent scandals across the blockchain space, excellent projects and startups have a grand opportunity to excel. Therefore, a commitment to ethics is critical to every crypto compliance program. In fact, ethics are one of the main missing mechanisms in traditional finance, which serves primarily to aggrandize income inequality[101] in the United States. Thus, every blockchain and decentralized project should commit to excellence in compliance and ethics. The two go hand in hand. In fact, adopting compliance mechanisms is a key factor for developing scalable blockchain technology.

C. *Scalable Use*

Non-security tokens will continue to represent most digital assets and will be a keystone to the scalable adoption of blockchain technology. Two critical elements for creating a non-security token are decentralization and participation. With decentralization, assets lack a common enterprise and should fail the Howey Test. Similarly, when users actively participate in a decentralized protocol with an asset, their efforts generate profits of their own accord, and thus, the asset should fail the Howey Test. Singularizing decentralization and participation, the most important thing

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97. *Id.* at 7 ("Legal academic scholarship discussing the interplay of ethics and compliance often leans more heavily on compliance than ethics.").

98. *Id.* at 9 (explaining that "[w]hat one person finds to be unethical may be considered entirely appropriate by another individual.").

99. *Id.* at 21 ("This Essay argues that it is time for firms to adopt explicit and specific ethical infrastructures within compliance programs.").

100. Martinez, *More Meaningful Ethics*, *supra* note 90, at 67 ("Each organization has its own unique structure, industries, risks, and concerns, and compliance programs regularly reflect that fact. Firms hoping to include more meaningful ethics norms within their ethics and compliance programs will need similar flexibility to implement ethical infrastructures that will work well for their particular firms.").

101. *See generally* R. von Gleichen et. al., Affordable childcare when you need it? Childcare opening hours in the context of the Childcare Act 2016 (2016), www.oxpolicy.co.uk (discussing market rates rising and the effect for costs in the context of childcare).

for new projects creating non-security assets is to focus on use. In other words, projects must create digital assets that are used as cryptographic keys on the blockchain rather than passive instruments for financial investment.

Moving forward, Solana is the leading blockchain for processing payments because its PoH model provides a cost-efficient method for transactions. Unlike Bitcoin and Ethereum transactions, Solana transactions are fast with de minimis network costs. These two elements allow Solana to have a competitive advantage compared to other networks, which will need additional scaling solutions to process payments affordably. Ultimately, the goal of scaling blockchain is to allow the blockchain to serve as a foundational financial infrastructure for generations to come. In the future, anyone will have access to the permissionless network and be able to pay for coffee, shop on Amazon, or even buy a car with digital assets on the blockchain.

What the blockchain industry needs is not more investors but rather more customers. A harsh criticism of blockchain technology is that blockchains are just another form of stagnation caused by speculative solutionism. But there isn't anything of substance or, more importantly, demand for technology. This may be true with proof-of-work blockchains because the underlying information technology is slow and expensive. In fact, for this reason, Ethereum is moving to a completely new token distribution model with Ethereum 2.0.[102]

Solana changes things. One of the great things about Solana is that its novel proof-of-history technology allows for faster and cheaper transactions than its predecessors, Bitcoin and Ethereum. For the way Edison is remembered for harnessing electricity in the light bulb, but Tesla is remembered for bringing electricity to the world—Satoshi is remembered for blockchain, but Solana is bringing blockchain to the masses.

One of the amazing things about the Solana blockchain is that, as an information technology, it has already reached a global scale less than a decade into its development. Globalization creates significant regulatory challenges for such a young technology,[103] and it is important that the United States continues to respect and foster both entrepreneurship and innovation in creating policy and legislative developments. It is important to recognize blockchains, like Solana, as public goods and to respect the reality that adding even more regulation to an already overregulated

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102. Upgrading Ethereum to radical new heights (2022), https://ethereum.org/en/upgrades/ [https://perma.cc/43XN-X4WS].

103. Olia Kanevskaia, *The Law and Practice of Global ICT Standardization*, 116 (Mar. 31, 2020) ("But despite the challenges "open standards," such as inclusion of proprietary solutions into Internet specifications and lack of sufficient governmental recognition, this concept, as well as the OpenStand principles, cannot be ignored in the context of modern standardization.").

industry will only reduce the public benefit otherwise provided by blockchains as open access recourses.

CONCLUSION

In a recent Tweet, Chairperson Gary Gensler of the SEC said, "Let's not risk undermining 90 years of securities law."[104] Gensler's statement is correct insofar as policymakers and courts must respect that for over 90 years, the SEC has been limited to only regulating securities, which are debt and equities. Moreover, we cannot risk misclassifying the millennium's greatest financial technology as securities simply because we do not have an existing legal infrastructure to control it. Instead, we should respect the innovation occurring and only classify digital assets intended to be securities as securities.[105]

Blockchains have value as an information technology. In other words, blockchains have value because the databases of both globalized and decentralized information have value. This is fundamentally different than traditional securities, debt—which has value supported by a legally and physically attached instrument, such as a social security number or house; and equities which have value attached to revenue streams, interest, and dividends. So, consider a bright line rule, respecting individual property rights and the 5th Amendment of the United States Constitution,[106] digital assets are not securities unless their creators expressly intend the asset to be a security and the asset represents an expressly secured interest in equity or debt.

In conclusion, Part I provided an overview of Solana, the largest PoH blockchain, as measured by market capitalization. Part II discussed and described securities compliance and enforcement data in the blockchain space. Part III introduced new mechanisms for measuring blockchain compliance statistically and applied those new mechanisms to various assets on Solana. Moving forward, Solana is a public good, and information technology strives to be a staple for excellence in securities compliance, ethics, and economic engineering.[107]

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104. Gary Gensler (@GaryGensler), Twitter (10:00 AM) (July 28, 2022), https://mobile. twitter.com/GaryGensler/status/1552700562533236739?ref_src=twsrc%5Egoogle%7Ctwcamp %5Eserp%7Ctwgr%5Etweet [https://perma.cc/KHH3-WUBR].

105. While we may not be able to say with certainty whether the SEC will argue a certain asset is a security, we can make predictions about the matter using legal informatics.

106. U.S. CONST. AMEND. V.

107. Veronica Root, *The Compliance Process*, 94 IND. L.J. 203, 216 (2019) ("Despite the focus by regulators and prosecutors on the importance of developing an effective compliance program, it is commonly understood that it would be inefficient for firms to strive to obtain "perfect" compliance.").