SupTech: Automated Governance of Initial Coin Offering (ICO) and Token Sales on Blockchain Networks





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# **Executive Summary**

The emergence of Blockchain technology fundamentally disrupted the financial intermediaries with cryptocurrencies and now has evolved into an instrument to raise funds for startups and the development of new projects. Smart contracts on decentralized systems provide a new way to manage trust between untrusted parties by keeping immutable record of transactions. This enabled transactions typically done on securities market infrastructure to be executed through ICO's and token sales where issuers and investors are able to exchange value for digital or crypto assets through consensus mechanisms.

This social and digital transformation creates new opportunities to facilitate capital formation and challenges for regulators to protect both accredited and non-accredited investors. This paper is based on belief that by also leveraging innovative technology, the government can address regulatory challenges in the financial services sector, employ a strategy to adopt blockchain solutions and continue to promote a market environment that is worthy of public's trust.

### Introduction

Consumers current demand for highly personalized, omni-channel digital experiences and their loss of trust in traditional banks after the 2008 financial crisis has created a new trend of Financial Technology (FinTech) companies and traditional banks trying to find innovative ways to meet these new expectations. Recently, many FinTechs launched mobile wallet applications and exchanges which accelerated the adoption of cryptocurrencies like Bitcoin and Ethereum. A cryptocurrency is a digital or virtual currency that uses cryptography for security and currently is not issued by any central bank.

Also, FinTechs and banks are using Regulatory Technology (RegTech) to gain efficiencies in fraud prevention, meeting know your customer (KYC) and anti-money laundering (AML) compliance reporting requirements. Traditional banks and financial institutions haven't introduced access to cryptocurrencies directly to their retail customers, however they are experimenting with components of blockchain's underlying technology like distributed ledger technology (DLT) to gain efficiencies in their operations.

In 2014, this new payment infrastructure evolved when the founders of Ethereum launched a crowdfunding campaign that raised US\$18 million<sup>1</sup> to fund their project and issued the investors Ethereum tokens in exchange as shares in the project. The success attracted other startups and established companies to use Ethereum protocol to crowdfund the development of their ideas by launching an initial coin offering (ICO) and token sales leveraging Simple Agreement for Future Tokens (SAFT)<sup>2</sup> framework.

In 2018, companies like Telegram are now planning to launch multi-billion<sup>3</sup> dollar ICO's in this unregulated market. The local, national, and the international demand grew so high for investing in these blockchain startups that multiple exchanges are now operating to facilitate a secondary market for buying and selling of these tokens.

This rapid social change and adoption of emerging technologies presents new challenges<sup>4</sup> for government regulators such as U.S. Securities and Exchange Commission (SEC) to continue their mission to protect investors, maintain fair, orderly, and efficient markets, and facilitate capital formation.

<sup>&</sup>lt;sup>1</sup> Hertig, Alyssa. "Who Created Ethereum?" *Who Created Ethereum? - CoinDesk*, Retrieved from <u>http://www.coindesk.com/information/who-created-ethereum/</u>

<sup>&</sup>lt;sup>2</sup> "The SAFT Project." The SAFT Project, <u>http://saftproject.com/</u>

<sup>&</sup>lt;sup>3</sup> Dale, Brady. "The Telegram ICO: What We Know (And Don't) About 2018's Biggest Token Sale." *The Telegram ICO:* What We Know (And Don't) About 2018's Biggest Token Sale - CoinDesk, 27 Feb. 2018, www.coindesk.com/telegram-ico-know-dont-2018s-biggest-token-sale/

<sup>&</sup>lt;sup>4</sup> Clayton, Jay, and J. Christopher Giancarlo. "Regulators Are Looking at Cryptocurrency." *The Wall Street Journal*, Dow Jones & Company, 24 Jan. 2018, <u>www.wsj.com/articles/regulators-are-looking-at-cryptocurrency-1516836363</u>

This paper is based on belief that new challenges bring new opportunities for regulators to transform how they perform market monitoring, market surveillance and automated governance with technology and innovation.

# Problem Statement

In this unregulated means for raising funds for a new venture, typically the issuer shares a whitepaper with a plan on their website and request their supporters to invest on their tokens with fiat or other cryptocurrency such as Bitcoin or Ether. Although these high-risk investment vehicles provide minimal supervision and accountability, early investors speculate the value of these tokens to increase on exchanges and decide to participate despite their lack of knowledge of the market, understanding of cryptoeconomics, skills in financial investing, financial goals and current financial standing. The "fear of missing out" (FOMO) on a new market opportunity has attracted global investments of almost US\$4 billion<sup>5</sup> to fund 372 projects in just 24 months.

High Risks associated with ICO's and Token Sales

- Unregulated market
- Most ICO white papers lack a clear explanation of the business reasons for blockchain
- Theft from wallet and exchange hacks
- Victim of phishing attacks and other cybersecurity attacks
- Lacks organization and team background information
- Fraudulent activity in social media
- Money Laundering and Terrorist Financing

<sup>&</sup>lt;sup>5</sup> EY. (2018, January 22). *Big risks in ICO market: flawed token valuations, unclear regulations, heightened hacker attention and congested networks* [Press Release]. Retrieved from <u>http://www.ey.com/us/en/newsroom/news-releases/news-ey-big-risks-in-ico-market-flawed-token-valuations-unclear-regulations-heightened-hacker-attention-and-congested-networks</u>

# **Proposed Solution**

The proposed solution involves subscription to a cloud-based solution providing automated extraction, real-time analytics, processing and dissemination of the relevant ICO and Token sales market data as presented in Figure 1 and Figure 2. This system should enable regulators with actionable insight and algorithmic supervision can provide automated advisory, online compliance reporting, review and capabilities to implement new regulation and rules.

Issuers of ICO's and Token sales can also (in)voluntarily register their business with SEC to gain streamlined access to capital to develop their blockchain ideas while investors will gain greater transparency and benefit from being able to review and access the information they need to make informed investment decisions with improved capabilities to perform risk assessment and valuation.

#### **Required Data**

The U.S. Securities and Exchange Commission (SEC) requires subscription to support ongoing market monitoring and market surveillance responsibilities in the following areas: blockchain technology; cryptoasset investment vehicles, such as privately offered and publicly offered pooled investment vehicles; cryptoasset infrastructure, such as trading, lending, and payment systems; initial coin offerings ("ICO"); and cryptoasset market analysis, news and research. As it relates to cryptoasset investment vehicles and ICOs, the Commission requires subscription for information which is routinely updated, that includes, but not limited to;

| Investment Vehicle Data (IVD) |                      |  |
|-------------------------------|----------------------|--|
| IVD Code                      | Data Attribute       | Data Source                                    |
| 001                           | Name                 | Extracted from Data Sources in Figure 3 and/or |
|                               |                      | submitted by Issuer.                           |
| 002                           | Туре                 | Extracted from Data Sources in Figure 3 and/or |
|                               |                      | submitted by Issuer.                           |
| 003                           | Website              | Extracted from Data Sources in Figure 3 and/or |
|                               |                      | submitted by Issuer.                           |
| 004                           | Date Established     | Extracted from Data Sources in Figure 3 and/or |
|                               |                      | submitted by Issuer.                           |
| 005                           | Disclosure of Assets | Extracted from Data Sources in Figure 3 and/or |
|                               | Under Management     | submitted by Issuer.                           |
| 006                           | Investment Strategy  | Extracted from Data Sources in Figure 3 and/or |
|                               |                      | submitted by Issuer.                           |
| 007                           | Country Domiciled    | Extracted from Data Sources in Figure 3 and/or |
|                               |                      | submitted by Issuer.                           |
| 008                           | Amount Raised        | Extracted from Data Sources in Figure 3 and/or |
|                               |                      | submitted by Issuer.                           |
| 009                           | Wallet Address       | Extracted from Data Sources in Figure 3 and/or |
|                               |                      | submitted by Issuer.                           |

| 010 | Government                | Extracted from Data Sources in Figure 3 and/or |
|-----|---------------------------|--|
|     | <b>Regulation Filings</b> | submitted by Issuer.                           |
| 011 | Blockchain Network        | Extracted from Data Sources in Figure 3 and/or |
|     |                           | submitted by Issuer.                           |
| 012 | Custody Chain             | Extracted from Data Sources in Figure 3 and/or |
|     |                           | submitted by Issuer.                           |

Figure 1. The subscription shall include the following data for investment vehicles

| Initial Coin Offering Data (ICOD) |                      |  |  |
|-----------------------------------|----------------------|--|--|
| ICOD Code                         | Data Attribute       | Data Source                                    |  |
| 001                               | Name of ICO Issuer   | Extracted from Data Sources in Figure 3 and/or |  |
|                                   | (Leadership team)    | submitted by Issuer.                           |  |
| 002                               | Website of Issuer    | Extracted from Data Sources in Figure 3 and/or |  |
|                                   |                      | submitted by Issuer.                           |  |
| 003                               | Type of ICO          | Extracted from Data Sources in Figure 3 and/or |  |
|                                   |                      | submitted by Issuer.                           |  |
| 004                               | ICO Fund Start Date  | Extracted from Data Sources in Figure 3 and/or |  |
|                                   |                      | submitted by Issuer.                           |  |
| 005                               | ICO Fund End Date    | Extracted from Data Sources in Figure 3 and/or |  |
|                                   |                      | submitted by Issuer.                           |  |
| 006                               | Amount Raised        | Extracted from Data Sources in Figure 3 and/or |  |
|                                   |                      | submitted by Issuer.                           |  |
| 007                               | Wallet Address       | Extracted from Data Sources in Figure 3 and/or |  |
|                                   |                      | submitted by Issuer.                           |  |
| 008                               | Business Segment of  | Extracted from Data Sources in Figure 3 and/or |  |
|                                   | Issuer               | submitted by Issuer.                           |  |
| 009                               | Country Issuer       | Extracted from Data Sources in Figure 3 and/or |  |
|                                   | Domiciled            | submitted by Issuer.                           |  |
| 010                               | Government           | Extracted from Data Sources in Figure 3 and/or |  |
|                                   | Regulation Filings   | submitted by Issuer.                           |  |
| 011                               | Blockchain Network   | Extracted from Data Sources in Figure 3 and/or |  |
|                                   |                      | submitted by Issuer.                           |  |
| 012                               | Custody Chain        | Extracted from Data Sources in Figure 3 and/or |  |
|                                   |                      | submitted by Issuer.                           |  |
| 013                               | Open Source          | Extracted from Data Sources in Figure 3 and/or |  |
|                                   | Community (GitHub)   | submitted by Issuer.                           |  |
| 014                               | Protocol owner       | Extracted from Data Sources in Figure 3 and/or |  |
|                                   |                      | submitted by Issuer.                           |  |
| 015                               | Trademark            | Extracted from Data Sources in Figure 3 and/or |  |
|                                   |                      | submitted by Issuer.                           |  |
| 016                               | Existing Business    | Extracted from Data Sources in Figure 3 and/or |  |
|                                   | Financial Statements | submitted by Issuer.                           |  |

| 017 | Marketing Plan      | Extracted from Data Sources in Figure 3 and/or |
|-----|---------------------|--|
|     |                     | submitted by Issuer.                           |
| 018 | Team Token Reserve  | Extracted from Data Sources in Figure 3 and/or |
|     |                     | submitted by Issuer.                           |
| 019 | Presale Discounts   | Extracted from Data Sources in Figure 3 and/or |
|     |                     | submitted by Issuer.                           |
| 020 | Currency Caps       | Extracted from Data Sources in Figure 3 and/or |
|     |                     | submitted by Issuer.                           |
| 021 | Currency Inflation  | Extracted from Data Sources in Figure 3 and/or |
|     |                     | submitted by Issuer.                           |
| 022 | Fundraising Cap     | Extracted from Data Sources in Figure 3 and/or |
|     |                     | submitted by Issuer.                           |
| 023 | Exchange and        | Extracted from Data Sources in Figure 3 and/or |
|     | Liquidity           | submitted by Issuer.                           |
| 024 | Token Lockups       | Extracted from Data Sources in Figure 3 and/or |
|     |                     | submitted by Issuer.                           |
| 025 | Contract Audits     | Extracted from Data Sources in Figure 3 and/or |
|     |                     | submitted by Issuer.                           |
| 026 | Security Procedures | Extracted from Data Sources in Figure 3 and/or |
|     |                     | submitted by Issuer.                           |
| 027 | Terms and           | Extracted from Data Sources in Figure 3 and/or |
|     | Conditions          | submitted by Issuer.                           |
| 028 | Background Checks   | Extracted from Data Sources in Figure 3 and/or |
|     |                     | submitted by Issuer.                           |

Figure 2. The subscription shall include the following data for ICOs.

The high-level solution design in Figure 3 below depicts a system with configurable displays and software interfaces to enable optimal decision making powered by automated extraction of relevant content from various Data Sources including Blockchain enabled processes and non-traditional data sources. Then in the Data Warehouse, the system performs autonomous data organization, big data analytics, machine learning, artificial intelligence (AI) and predictive analytics.

### High-level Solution Design



Figure 3. Supervisory Technology (SupTech) blueprint for data subscription system to increased transparency for supporting market monitoring and market surveillance.

# Conclusion

The securities market has the potential to exceed US\$20 billion<sup>6</sup> in cost savings for industry incumbents, causing established companies and startups to position themselves with strategies to compete or lead with emerging technologies. Now governments have the opportunity to take advantage of the rapid pace of innovation in the blockchain ecosystem and big data analytics, while dealing with the risks and challenges<sup>7</sup>. The opportunity is now for The U.S. Securities and Exchange Commission to transform how they perform market monitoring, market surveillance and automated governance with Supervisory Technology (SupTech)<sup>8</sup>.

<sup>&</sup>lt;sup>6</sup> Shrier, D., & Pentland, A. (2016). *Frontiers of financial technology: expeditions in future commerce, from blockchain and digital banking to prediction markets and beyond.* Cambridge, MA: Visionary Future.

<sup>&</sup>lt;sup>7</sup> Cheng, Steve, et al. "Using Blockchain to Improve Data Management in the Public Sector." McKinsey & Company, 1 Feb. 2017, www.mckinsey.com/business-functions/digital-mckinsey/our-insights/using-blockchain-to-improve-data-management-in-the-public-sector.

<sup>&</sup>lt;sup>8</sup> Kamali, Wilson, and Douglas Randall. "Leveraging 'Suptech' for Financial Inclusion in Rwanda." The World Bank Group, 8 June 2017, <u>http://blogs.worldbank.org/psd/leveraging-suptech-financial-inclusion-rwanda</u>

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