MINUTES OF THE MEETING OF THE
U.S. COMMODITY FUTURES TRADING COMMISSION'S
TECHNOLOGY ADVISORY COMMITTEE
February 26, 2020

The Technology Advisory Committee (TAC or Committee) convened for a public meeting on Wednesday, February 26, 2020, at 10:00 a.m., at the U.S. Commodity Futures Trading Commission's (CFTC or Commission) Headquarters Conference Center, located at Three Lafayette Centre, 1155 21st Street, NW, Washington, DC. The TAC heard presentations on audit trail recommendations, stablecoins, the International Swaps and Derivatives Association's (ISDA) common domain model, crypto insurance and custody, and crypto self-regulatory organizations. The TAC also voted on a recommendation from its Cybersecurity Subcommittee that the CFTC make a statement of support for the Financial Services Sector Coordinating Council (FSSCC) Cybersecurity Profile.

TAC Members in Attendance
Richard Gorelick, TAC Chair, Director, Eventus Systems, Inc.
Erik Barry, Head of Client Platform for Prime Derivative Services, Credit Suisse
Christopher Chattaway, Managing Director, Goldman Sachs
Thomas Chippas, Chief Executive Officer, ErisX
Charley Cooper, Managing Director, R3
Gary DeWaal, Special Counsel, Katten Muchin Rosenman LLP
Christopher Hehmeyer, Managing Member, Hehmeyer Trading and Investments (via phone)
Mayur Kapani, Chief Technology Officer, Intercontinental Exchance, Inc. (ICE)
Derek Josef Kleinbauer, Vice President, Bloomberg SEF LLC, and Global Head of Rates and Equities Electronic Trading, Bloomberg L.P., Bloomberg
John Lothian, President and Chief Executive Officer, John J. Lothian Co. Inc.
Timothy McHenry, Vice President, Information Systems, National Futures Association (NFA)
Jennifer Peve, Managing Director, Head of Solutions Business Development and FinTech Strategy, Depository Trust and Clearing Corporation (DTCC)
Larry Tabb, Founder and Research Chairman, TABB Group
Supurna VedBrat, Global Head of Trading, BlackRock
Haimera Workie, Financial Innovation and Senior Director, Office of Financial Innovation, Financial Industry Regulatory Authority (FINRA)
Yesha Yadav, Professor of Law, Vanderbilt University, Special Government Employee (SGE) for CFTC

Lead Participants
Natalie Tynan, Associate General Counsel, Head of Technology Documentation Strategy, Futures Industry Association (FIA) (Panel I)
Tammy Botsford, Executive Director and Assistant General Counsel, J.P. Morgan (Panel I)
Mark Fabian, Vice President, Market Regulation, ICE Futures U.S. (Panel I)
Jeff Ramsey, Managing Director and General Counsel, Geneva Trading (Panel I)
Andrew Vrabel, Executive Director, Global Head of Investigations, CME Group (Panel I)
Tommaso Mancini-Griffoli, Deputy Division Chief in the Monetary and Capital Markets Department, International Monetary Fund (IMF) (Panel II)

Charles Cascarilla, Chief Executive Officer and Co-Founder, Paxos (Panel II)
Steven Becker, President and Chief Operating Officer, MakerDAO Foundation (Panel II)
Eddie Wen, Global Head of Digital Markets, J.P. Morgan (Panel II)
Ian Sloyan, Director, Market Infrastructure and Technology, ISDA (Panel III)
Jim Knox, Managing Director, Technology & Communications Industry-Regional Practice Leader, Aon (Panel IV)
Itay Malinger, Co-Founder and Chief Executive Officer, Curv (Panel IV)
Jeff Bandman, Board Member, Global Digital Finance (Panel V)
Yusuf Hussain, President, Virtual Commodity Association (Panel V)
Brad Vopni, Founding Board Member, Association for Digital Asset Markets (Panel V)

CFTC Commissioners and Staff in Attendance
Brian D. Quintenz, Commissioner and TAC Sponsor
Rostin Behnam, Commissioner
Dan M. Berkovitz, Commissioner
Meghan Tente, TAC Designated Federal Officer (DFO) and Acting Associate Director, Division of Market Oversight

I. Opening Remarks

Ms. Tente called the meeting to order. In opening remarks, Commissioner Quintenz stated that the TAC would hear presentations on audit trail requirements, stablecoins, ISDA's common domain model, cryptocurrency insurance and custody best practices, and cryptocurrency self-regulatory organization efforts. He also stated that the TAC would then consider the Cybersecurity Subcommittee's recommendation that the CFTC make a statement of support for the FSSCC Cybersecurity Profile. Commissioners Behnam and Berkovitz both noted that the Commission benefits greatly from TAC meetings, which enable it to keep up with developments and technology.

II. Panel I: FIA Audit Trail Recommendations

The FIA's Audit Trail Working Group presented their recommendations that existing CFTC audit trail requirements be streamlined. Ms. Tynan explained that in January 2020 the Working Group submitted a letter recommending that the Commission: (1) amend Regulation 38.553 to eliminate the requirement that Designated Contract Markets (DCM) conduct annual audit trail reviews; (2) amend Regulation 38.552 to remove specific elements of an adequate transaction database; (3) confirm that DCMs may maintain records of "Tier 1" data on behalf of Futures Commissions Merchants (FCM) and other trading participants; and (4) require that DCMs amend their rules to confirm FCMs do not have to maintain records or orders transmitted directly to DCM trading systems by direct access customers. Ms. Tynan also stated that the Working Group is not proposing changes to recordkeeping requirements under regulations 1.31 and 1.35.

Mr. Fabian explained that "Tier 1 Data" is comprised of audit trail data that is captured and maintained by the DCM, while "Tier 2 Data" is comprised of all electronic order messages not included in the definition of Tier 1 Data that are required to be maintained pursuant to

regulations 1.31 and 1.35. He explained that the Working Group is trying to streamline the annual audit trail requirement because the DCM already has most of the data that it needs, and it is very detailed information that is the foundation for nearly every DCM trade practice investigation. Mr. Ramsey added that he thinks of Tier 2 Data as the backstage activity before orders are actually sent to the exchange, while Tier 1 Data would be the moment that the order is captured through the Tier 1 retention and actually launched to the exchange.

Mr. Vrabel stated that the regulatory focus should be on DCM programs that are designed to identify data anomalies or violations from a data integrity perspective, rather than going out to firms to validate that they have the same data that the DCM already possesses. He noted that because DCMs are required to maintain Tier 1 Data to satisfy core principles and regulatory obligations, they could offer a Tier 1 recordkeeping service to firms subject to regulations 1.31 and 1.35, which would eliminate non-value-added work and reduce multiple redundant copies of audit trail records. He added that if regulations are adopted to eliminate the requirement that DCMs perform annual audit trail examinations, there is interest in similar relief for clearing firms to not be required to maintain Tier 1 data on behalf of connections they guarantee.

Ms. Botsford added that the Working Group is recommending a principles-based rather than prescriptive approach because the blockchain or processing might evolve and become more efficient. She stated that breaking "Tier 1" and "Tier 2 Data" apart would help streamline the retention process for DCMs as well as eliminate duplicative costs.

In the panel discussion, Mr. Fabian noted that the Working Group had not attempted to quantify costs associated with audit trail reviews, but it takes several staff members and multiple man-hours to send out requests, get information back, and analyze it. Other participants stated that their firms did not have dedicated employees for these reviews and that audit reviews take employees away from their regular daily work. Mr. Tabb inquired whether the elimination of the requirements would still allow DCMs to backtrack and figure out where the problem originates. Mr. Fabian noted that DCMs do not natively have Tier 2 Data in their systems, and have to go to FCMs for Tier 2 Data regardless of the proposals. Mr. Vrabel confirmed that DCMs have triggers that highlight whether there has been any market abuse because of the information they gather, so they are not dependent on information that clearing members may have.

III. Panel II: Stablecoins

Mr. Cascarilla explained that Paxos has tokenized a variety of different assets, including a white-label stablecoin and gold-backed token. Paxos is also a custodian that holds cryptoassets, cash assets, gold assets, other commodities, and securities. The trust is chartered under New York banking law and follows practices for anti-money laundering and the Bank Secrecy Act. Mr. Cascarilla explained that for the dollar stablecoin, one dollar equals one stablecoin, which is verified by independent auditors. The dollar tokens are redeemable for one dollar and do not fluctuate. Paxos does not take credit risk – it simply holds dollars in a reserve account and issues a token on Ethereum, although it will likely add other chains. Not only is Paxos regulated, but so is the token itself. Paxos is marketing its stablecoin not just for itself, but has "white labeled" or branded it for partners, most notably Binance. Mr. Cascarilla explained that if one has access to a smart wallet, one can now have access to digital U.S. dollars, which is important for unbanked

and underbanked persons. He further remarked that stablecoin is useful for trading, settlement, payment, banking, remittance, and other businesses.

Mr. Becker gave an overview of decentralized finance (DeFi), and MakerDAO's Dai stablecoin. Decentralization is used to describe organizations or activities that are not controlled from one central place; it is the dispersion or distribution of functions or powers. DeFi is a new monetary and financial system that is built on public blockchains, which augments but does not replace the traditional system. Mr. Becker also stated that decentralization creates value by enabling independent access to the global financial system, and that there is a misconception that it is unmanageable and not capable of being regulated. He also explained that the MakerDAO protocol is a decentralized, open-source protocol layer applied on top of Ethereum, but is blockchain-agnostic. Additionally, the community that is engaged with a decentralized system gives it value. Further, MakerDAO provides the necessary tools for the DeFi space through the MakerDAO protocol, and the decentralized stablecoin DAI is the byproduct.

Mr. Wen explained that JPM Coin is a digital coin designed to facilitate instantaneous payment transfers between institutional JPM clients using the blockchain. He stated that while JPM Coin has not yet received full regulatory approval and remains a prototype, the results of tests with customers are promising. Additionally, JPM Coin is built on the Quorum protocol-based blockchain network, but can be adapted to other protocols. Mr. Wen further explained that it is only available to JPMorgan customers who are AML/KYC compliant, and it is a permissioned blockchain and is not available for retail use. He noted that JPM Coin is not money *per se*, but it is a digital coin that represents the clients' money at the bank. Also, clients can redeem JPM Coin for U.S. dollars and convert the coins back into money credited to their accounts. A JPM Coin always has a value equivalent to one USD, and is backed by the faith and credit of JPMorgan Chase. Mr. Wen recommended that regulation be activity-based, regardless of the type of financial institution conducting the transaction, and that minimum standards for distributed ledger technology (DLT) networks be established that are globally consistent.

Mr. Mancini-Griffoli explained that payment depends on a stable store of value which has two elements -- price stability and exchange stability. He explained that there are two types of private monies -- collateralized (e.g., bank deposits and stablecoins) and non-collateralized (*e.g.*, cryptoassets). He compared stablecoins to a bank deposit along five dimensions: denomination, exchange pledge, backstop, settlement technology, and backing assets. He noted that the term "stablecoins" encompasses many products, including electronic money (E-money) that is token-based and investment money (I-money), and that they vary in terms of exchange stability. He discussed several types of E-money, including synthetic Central Bank Digital Currency (sCBDC). He also discussed stablecoins in terms of public policy objectives, including financial stability, monetary policy control, consumer protection, data privacy and confidentiality, financial integrity, and competition and efficiency.

During the panel discussions, Mr. Chippas inquired whether coin holders receive interest and how a stablecoin would react to a negative interest rate environment. Mr. Cascarilla said that an interest rate component could raise securities law issues and that negative interest rates are partly why other G-7 and G-20 countries have been less involved in the creation of stablecoins. Ms. Yadav asked about potential difficulties, latency, and delays in the underlying blockchain

itself, for example with ether, and how that could affect Paxos. She also asked how they are managing errors, such as fat-finger trades or Herstatt risk or fraud and clawback. Mr. Cascarilla said that most people are using Ethereum as a smart contracting layer, but it is not the only protocol that could be used for Paxos. Furthermore, when people send Paxos money, they are taking almost no risk since the money is swept either into a network of banks or into T-bills or other safe instruments.

IV. Panel III: ISDA Demonstration of the Common Domain Model

Mr. Sloyan gave a presentation on some applications of the ISDA common domain model (CDM). He explained that a problem that derivatives markets have is that all of the information exchanged by market participants is on different formats and different standards are used for storing information, leading to inconsistencies in records. ISDA created CDM not as a new standard or format, but as a model that can distribute code to market participants in order to bring consistent implementation of the market's standards for products, calculations, and events that happen in derivatives markets. He discussed applications of the CDM, including for interest rate clearing processes, collateral data and processes, and regulatory reporting. The CDM enables interoperability by removing the burden of setting up connections to different systems and entities. The CDM can be used to represent rules and best practices as code so as to implement them across the industry in a more consistent way, as ISDA successfully demonstrated in a recent pilot applying the CDM to EMIR and MiFID rules. He demonstrated how a swap trade could be reported using the CDM to satisfy part 43 reporting requirements.

In response to questions from the Committee members, Mr. Sloyan explained that the code is open source and may be downloaded in different programming languages. He explained that the CDM would exist as an implementation layer, so its components are not part of the smart contract *per se*.

[Lunch Break]

V. Panel IV: Crypto Insurance and Custody

Mr. Knox stated that robust participation by insurance companies is necessary for the digital asset space to scale to its full potential. He explained that negative headlines about monetary losses or fraud in the digital asset space, whether it be digital assets stolen from exchanges, hacking of exchanges, or fraudulent activity with some of the initial coin offerings (ICOs), has had a very chilling effect on the insurance industry. This has affected the terms that are being offered to companies in this space, the amount of limits being offered, and the type of insurance being offered. Mr. Knox covered the various types of insurance which are available including Directors & Officers Insurance, Crime insurance, and Errors and Omissions insurance. Mr. Knox explained how insurance companies are driving best practices in the crypto marketplace. He remarked that if you do not have your house in order, you will not get insurance.

Mr. Malinger gave a presentation on digital asset custody using multi-party computation, or MPC. He discussed the evolution of security for digital assets and the challenges they pose,

including the challenge of securing private keys, which enable owners of digital assets to verify identity using a secret key to gain access to their assets on the blockchain. He noted that there is a significant trade-off between security and liquidity, and that because math powers the blockchain, there is now a way to solve for this trade-off using various cryptographic solutions that are based on mathematical tools and equations. In fact, MPC can successfully use math itself to effectively eliminate the private key and to create identities in which the secret material is distributed across many, many players. He gave several examples to demonstrate the ability of multiple parties to jointly perform mathematical computations without any party revealing its secret to others. He also explained how zero knowledge proofs and the Diffie Hellman protocol can be used to create cryptographic solutions.

In response to a question during the panel discussion, Mr. Malinger explained why MPC is preferable to a multi-sig wallet. Asked about the intersection of the two presentations and how much insurers look at the key management systems actually being used, Mr. Knox said that insurance companies are very interested in MPC and are very aware of multi-sig and sharding.

Ms. Yadav asked how much input there had been from state insurance regulators, whether reserve requirements for insurers are likely to change given the potential volatility of underlying assets and technological fragilities, and whether insurers are able to diversify their risks. Mr. Knox stated that state regulators are extremely aware and proactive. He did not see reserve requirements being changed right now, but in the future they could be if insurance policies are issued in denominations of digital assets. He added that diversification is huge for insurance companies, but that not many companies, particularly in the U.S., offer insurance products in the digital asset space. Mr. Chattaway asked about the size of the market and the notional number of claims filed. Mr. Knox said that the companies that incurred losses were all uninsured, and losses have not been heavy for insurers because underwriters walked away from the space after the negative headlines. Mr. Chattaway asked if insurers are charging enough premiums if there is great demand. Mr. Knox said that for cold wallets where risk is limited there is significant insurance capacity but for hot wallets, capacity is limited and very expensive..

[Break]

VI. Panel V: Crypto Self-Regulatory Organizations

Mr. Bandman explained that Global Digital Finance (GDF) is working on a single set of global rules and standards and self-regulation in the digital space. He noted that GDF has drafted codes of conduct based on community standards developed by working groups and subject to public comment. Additionally, GDF codes can serve as models for law and regulations and can be adapted to specific jurisdictions. He also explained that the codes address a number of areas and are not intended to supersede applicable law, but rather to address regulatory gaps. Further, codes of conduct currently are implemented with self-certification by members, but there is interest in moving to external certification or audit. Mr. Bandman also remarked that about half of GDF's members have elected to adhere to the code, but that number is growing. Also, the biggest regulatory challenges GDF members see include inconsistent and unaligned cross-border regulatory guidance, lack of clarity, and that not all market actors are regulated.

Mr. Hussain explained that the Virtual Commodity Association (VCA) was established with the goal of becoming an industry-sponsored designated self-regulatory organization (SRO) for the U.S. spot virtual currency industry where those virtual currencies are commodities. VCA has convened crypto industry and financial industry subject matter experts, including on committees on BSA/AML, custody and security, insurance, tax, market integrity, and examination/enforcement. He said that VCA has not yet been designated an SRO and would like to continue discussions with the CFTC.

Mr. Vopni stated that the Association for Digital Asset Markets (ADAM) is a private self-governing association of firms with the mission of fostering fair and orderly digital asset markets. He noted that ADAM has developed a principles-based code of conduct which its members sign. He also explained that the code is intended to define appropriate professional standards of conduct for digital asset markets in the areas of governance; compliance and risk management; market ethics; conflicts of interest; transparency and fairness; market integrity; custody; information security and business continuity; anti-money laundering; and countering the finance of terrorism.

During the panel discussions, Mr. Cooper asked whether the SROs contemplated by panelists would cover digital assets broadly or specifically cryptocurrencies because, in the case of digital assets, underlying assets are already regulated. Mr. Hussain replied that the VCA used the term "virtual currency" intentionally because it is looking specifically at U.S.-based spot cryptocurrency market self-regulation. Mr. Bandman said that GDF's initial focus has been cryptoassets as that had the most urgent need for a code of conduct, but if the organization can help support global digital finance it is within their roadmap. Mr. Chippas asked whether an SRO is needed specifically for spot-crypto currencies given that derivatives and securities markets are already regulated in the U.S. and the CFTC has authority to get involved in underlying spot commodity markets under various conditions. Mr. Hussain replied that VCA's goal is to fill in regulatory gaps for U.S. crypto spot currency markets. Mr. Bandman agreed that while there is no need to reinvent the wheel where an excellent supervisory framework already exists, there are many gaps in regulation. Mr. Vopni said that due to regulatory uncertainty and the lack of a clear definition for digital assets, participants need to come together to create rules of the road.

Commissioner Berkovitz asked whether the SROs would have both surveillance and enforcement authority, and whether market participants will support that or gravitate to organizations that do not have this authority. Mr. Hussain said that VCA fully intends to become a designated SRO with enforcement authority, but would like there to be a level playing field as other jurisdictions formalize their SROs. Mr. Bandman stated that he believes market participants would be encouraged if the CFTC were to authorize an SRO for the spot market, as the SRO would be acting under delegated authority subject to CFTC supervision.

VII. TAC Vote on a recommendation from the TAC Cybersecurity Subcommittee

Following the panels, Chairman Gorelick presented to the TAC for a vote, a recommendation from the Cybersecurity Subcommittee that the CFTC make a statement of support for the FSSCC Cybersecurity Profile. The recommendation was presented at the last two TAC meetings and would align the CFTC with other regulators. Mr. McHenry explained that the

recommendation is in response to the need for cybersecurity regulatory standards, adding that there is broad support for the proposal. He also remarked that the Cybersecurity Subcommittee believes that the profile can provide great utility to firms as well as regulators, and that it would benefit from CFTC support. The recommendation was approved unanimously.

Closing Remarks

Following closing remarks from Commissioners Quintenz, Behnam, and Berkovitz, Ms. Tente adjourned the meeting at 3:43 p.m.

I hereby certify that the foregoing minutes are accurate.

Richard B. Gorelick — 9/11/2020

Richard Gorelick
Chair, Technology Advisory Committee

Date