UNITED STATES OF AMERICA

COMMODITY FUTURES TRADING COMMISSION

TECHNOLOGY ADVISORY COMMITTEE MEETING

Washington, D.C.

Tuesday, June 3, 2014

PARTICIPANTS:

IRENE ALDRIDGE
Able Alpha Trading

MICHAEL ATKIN
EDM Council

TRABUE BLAND
ICE

MARISOL COLLAZO
DTCC

CHRISTOPHER CONCANNON
Virtu Financial

ROB CREAMER
FIA PTG

ED DASSO
NFA

GARY DEWAAL
Katten Muchin Rosenman, LLP

BRYAN DURKIN
CME

KAREL ENGELEN
ISDA

KEITH FISHE
Trade Forecaster Global Markets

SCOTT FITZPATRICK
Tradition

RICHARD GORELICK
RMG Advisors

MICHAEL GORHAM
Illinois Institute of Technology

PARTICIPANTS (CONT'D):

WALTER HAMSCHER
SEC

DAVID HARTNEY
Bank of America

JOEL HASBROUK
Stern NYU

JORGE HERRADA
CFTC

JULIE HOLZRICHTER
CME Group

STEVEN JOACHIM
FINRA

PIERRE LAMY
Goldman Sachs

DAVE LAUER
KOR Group

BRAD LEVY
Markit, MarkitSERV

CLIFFORD LEWIS
Eris Exchange

JUSTIN LLEWELLYN-JONES
Fidessa

ADAM LITKE
Bloomberg

CHRIS LORENZEN
Eagle Seven, LLC

JOHN LOTHIAN
John J. Lothian Co. (CTA)

PARTICIPANTS (CONT'D):

NANCY MARKOWITZ
CFTC

JEFFREY MARON
Markit

VINCE MCGONAGLE
CFTC

WILLIAM NICHOLS
U.S. Treasury

MICHAEL O'BRIEN
Eaton Vance

LEE OLESKY
Tradeweb

SCOTT O'MALIA
CFTC

STEVEN REICH
FERC

PETER REISS
DE Shaw & Company

JOHN ROGERS
CFTC

JOSEPH SALUZZI
Themis Trading

TOD SKARECKY
Clarus Financial Technology

NICK SOLINGER
Traiana

SAYEE SRINIVASAN
CFTC

PARTICIPANTS (CONT'D):

ERIC SWANSON
BATS Global Markets

LARRY TABB
TABB Group

MARSHALL TERRY
South Ferry

JEFFREY TRAHAN
Deere & Company

CHUCK VICE
ICE

JASON VOGT
Cargill, Black River Asset Management

ANDREW VRABEL
CME

MARK WETJEN
CFTC

GREGORY WOOD
Deutsche Bank

JAMES WOODS
FIA

WENDY YUN
GSAM

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A G E N D A

Opening Remarks:

COMMISSIONER SCOTT D. O'MALIA, Chairman, TAC

ACTING CHAIRMAN MARK P. WETJEN

Panel I: High-Frequency Trading Impact on Derivatives Markets: Answering the Charges of Unfair Advantages by HFT Firms:

BRYAN DURKIN, Managing Director and Chief Operating Officer, CME

CHUCK VICE, President and Chief Operating Officer, ICE

ROB CREAMER, Chairman, FIA PTG

JOE SALUZZI, Co-Founder, Themis Trading

Panel II: Developing a 21st Century Surveillance Program:

JORGE HERRADA, Associate Director, Office of Data and Technology, CFTC

ANDREW VRABEL, Executive Director, Global Investigations, CME

STEVE JOACHIM, Executive Vice President, FINRA

ROB CREAMER, Chairman, FIA PTG

DAVE LAUER, President and Managing Partner, KOR Group

TRABUE BLAND, Vice President, Regulation, ICE

Panel III: Increasing Buy Side Participation on SEFs:

TOD SKARECKY, Senior Vice President, Americas, Clarus Financial Technology

A G E N D A

WENDY YUN, Managing Director, GSAM

MICHAEL O'BRIEN, Director of Global Trading, Eaton Vance

SCOTT FITZPATRICK, Executive Director, Tradition

Closing Remarks:

COMMISSIONER SCOTT D. O'MALIA, Chairman, TAC

Adjournment

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P R O C E E D I N G S

(10:06 a.m.)

COMMISSIONER O'MALIA:

I'd like to welcome everyone to the 12th full TAC Committee meeting since we've reconstituted this back in, I guess, July of 2010. And I think out of the 12 full committee meetings I think we've probably talked about high-frequency trading at least 9 of them.

So, as you can see, we have a record attendance, including members of the full committee, members of the Data Standardization Committee and the Subcommittee on Automated and High-Frequency Trading.

I'm very grateful to have everybody's participation and involvement here. To get this many people from around the industry involved in one room, to spend the entire day, is no insignificant task, and I realize you've made a lot of changes to your schedule to be here, and I'm grateful for that.

And I'd like to also thank our witnesses way down at the end of the table, who have also made accommodations to their schedule and, of course, had to prepare their presentations to testify and to get this debate going.

We also have a number of new TAC members here today as well as subcommittee members on the Data and High-Frequency Trading Subcommittees as well. So I'm very pleased that we were able to pull together all of these people, and I appreciate your service.

Some of you, this is your first meeting. Turn to your right or turn to your left; there's somebody that's done this before.

And what we want is honest, fresh and direct answers. We have a lot to get through. So your participation is appreciated. You're here because you're an expert, and to not offer your expert opinion would be a disservice to this little organization. So feel free to jump in.

So today, we have three topics on the agenda. First, we'll address the issues raised by Michael Lewis's book, Flash Boys, to determine whether these issues he raises in his book have any relevance to the derivatives markets.

Second, in light of the evolving and complex market structures related to automated trading, I've pulled together a panel that will offer ideas about how the Commission should design a 21st Century surveillance system. Traders do not trade on just one market alone. They trade on many markets, and we need to adapt to that reality.

Today, I'd like to discuss key elements of a 21st Century surveillance system that integrates swaps, futures and OTC derivatives data. I'd like to have our witnesses address these cross-market surveillance challenges and identify the key tools that will help us detect fraud and manipulative and deceptive trading practices.

Finally, I'd like to receive an update on the state of the swap execution facilities. I'm concerned that the low level of participation by the buy side firms in SEF trading, and I would like to know whether there are any regulatory impediments that might impact their participation.

Now as to the first panel, Michael Lewis's book has stirred up quite a debate about HFT and market structure. The book claims that equity markets are rigged by HFTs that are front-running other traders' orders. The book raises other issues such as HFTs having faster data feeds, exchanges paying for brokers to take or provide liquidity and HFTs co-locating within the exchanges.

I want to address these issues directly and to have a frank discussion with all of you to understand how automated trading and high-frequency trading impacts derivative markets. I can't think of a better forum to address these relevant market issues.

We have four witnesses who will offer their opinions on the first panel. We have Bryan Durkin, COO of the CME Group; Chuck Vice, President and CEO of ICE; Joe Saluzzi, Co-Founder of Themis Trading; and, Rob Creamer of Geneva

Trading, currently serving as Chairman of the FIA Principal Traders Group.

Now, for Panel II, we have posed several questions regarding the design of the 21st Century surveillance system.

What are the essential tools and technologies that the Commission needs to have in place going forward?

Should the Commission invest in order message surveillance systems and cross-market surveillance tools?

What is the current trader and firm ID protocol? And what additional information, if any, should be required to monitor automated systems? We will start our presentation off, or our panel off, with a presentation. It will be a very interesting panel. This is something we've, for the first time, asked our staff to pull together. And Jorge Herrada, the Associate Director of the CFTC's Office of Data and Technology, has put together an outstanding presentation on kind of the state and the opportunity that the Commission has in terms of its data.

This is something that we haven't put on essentially one slide to look at all the different data sources and how we're going to integrate them to do our market surveillance, and I think that will provide some context in which then some of our other witnesses can talk about how we fully integrate that and really develop a top quality surveillance system.

After Jorge, Andrew Vrabel, who is the Executive Director of Global Investigations at CME, will present -- and Trabue Bland, Vice President of Regulatory Affairs with ICE.

We will hear from Steve Joachim, Executive Vice President of FINRA, to talk about comparable and similar systems in the equities markets.

And, again, Rob Creamer will be on the hot seat to discuss his views from the FIA PTG group.

And, finally, we'll hear from Dave

Lauer, President and Managing Partner at KOR Group, on his views.

Panel III, the last panel, will update us on the current status of trading on the SEFs and will share some of the concerns we have heard from buy side participants.

I'd like to know whether the Commission rules create a barrier to trading on SEFs and force market participants to turn to alternative trading solutions.

We have a gentleman from Clarus Technology, Tod Skarecky, who will provide us kind of an overview on the state of SEF trading to date.

And then we'll hear from Wendy Yun, Managing Director, Goldman Sachs Asset Management, and Michael O'Brien, Director of Global Trading at Eaton Vance, for the buy side perspective, and Scott Fitzpatrick, Executive Director of Tradition, who is also serving as Chairman of the Wholesale Market Brokers Association, for their perspectives on SEFs.

Since we have many TAC members that also operate SEFs, I would greatly appreciate any insight they can offer on SEF trading activity to date.

Again, let me express, on behalf of the Commission and myself, our gratitude for everyone who took time to come here today and prepared presentations. We really look forward to the rest of the discussion today.

With that, I will not recognize Chairman Wetjen, who is not here but who will be here, and when he does we will recognize him.

But, in the meantime, I'm going to get started with our first panel, and I think we're going to start with Bryan to discuss HFT.

MR. DURKIN: Thank you, Commissioner and the team from the CFTC.

For the last three and a half years, this Committee and the TAC Subcommittee on High-Frequency Trading have examined market structure topics associated with electronic trading in the futures markets. Many respected and noteworthy principles have emanated as a result of this in the context of risk management, pre and post-trade protocols, system safeguards, access to co-location facilities and messaging policies, among others, which have added to the integrity, the transparency and the vibrancy of our markets.

This all occurred long before recent media attention on these topics, which is not surprising because the futures industry has a long history of combining self-reflection and innovation to deliver fair and secure markets that meet the risk management needs of all of its participants.

The formation of the Technology Advisory Committee and the active discussions that have resulted are just another example of this sense of self-awareness. And I would like to commend Commissioner O'Malia, his team and the TAC participants over the years, including many of my colleagues sitting at this table today, for all that has been accomplished.

Now algorithmic and high-frequency trading are products of the evolution of markets from a floor-based model to an electronic model. Market participants sought greater price transparency through more immediate trade executions and confirmations, and electronic trading has met that demand.

That technological change has been the catalyst for the development of more competitive, more efficient, more transparent markets as well as substantial improvements in innovation, in risk management and in regulatory capabilities. As a result, algorithmic and high-frequency trading has grown, contributing to significant volume growth across all asset classes and providing greater liquidity and tighter bid-ask spreads.

The liquidity generated by these market participants is, in turn, relied upon by all types of market participants, including banks, hedge funds, asset managers, farmers and ranchers, corporations and commercial producers, to achieve their risk management and their investment objections, and it allows them to do so at lower costs.

Now, despite this progression, as you are all well aware, a particular type of electronic trading strategy has been negatively portrayed by some who assert that the presence of HFT -- a reference to a style of trading which this Committee has expended tremendous effort, I might add, trying to define -- is abusive and disruptive to markets, much of which has been based on generalization and misinformation as applied to these futures markets.

The fact is that the increased innovation and the speed of electronic trading has challenged us to ensure that our markets operate with integrity and are fair and open to all customers. CME Group has been focused on this task for many, many years, and we've worked closely with our regulators and our customers to maintain a level playing field throughout this evolution.

We've created a market structure of

which we are very proud of and should be proud of. In particular, we use a central limit order book. It's a single integrated marketplace, allowing for concentrated liquidity in one transparent location.

The identity of traders and firms is protected from disclosure on all bids, offers and execution reports.

Bids and offers are available to all market participants and are matched according to transparent exchange matching algorithms.

Our market data is sent to everyone at once. There are no preferential data feeds that are provided exclusively to a particular segment of user base.

While customers have several options in terms of how they can receive data from us, we do not restrict anyone's access. Having multiple connectivity options makes our markets available and accessible to a broad array of market participants.

No one can see orders prior to them

hitting our match engine and being made available to the order book.

We maintain a complete and a comprehensive audit trail of every single message, order and trade down to the message ID of every participant in our markets. This information is fed into a sophisticated surveillance system that allows us to identify and to prosecute prohibited trading practices that violate our rules.

In addition to having built a market structure that promotes liquidity, efficiency, transparency, accessibility to customers from banks, hedge funds, commercial producers, merchandisers to farmers and ranchers, CME Group promotes market stability through industry-leading risk controls. We have developed a wide array of capabilities to manage risk and volatility and to mitigate market disruptions. These are applied to all levels of market participants.

These include credit controls. Credit controls are pre-execution risk controls that are provided that enable clearing firms to set credit limits for their executing firms. Our credit controls, which every clearing firm must use, can include order blocking, order cancellations, e-mail notifications which can be set at varying thresholds.

We also employ a tool called cancel on disconnect that will cancel resting orders for a market participant who becomes disconnected from our system.

We employ price banding. All orders are subject to price verification. Now bids that are at prices well above -- or offers that are at prices well below -- the market fall outside of that determined band that we establish; then those orders are rejected automatically.

Maximum order quantity. Every product has a predefined maximum quantity per order. This step ensures that the order is not exceeding this limit. And, if the maximum quantity is exceeded, the order is automatically rejected.

Messaging controls. These controls limit the rate at which firms can submit mass quotes and can block orders from entering our system if volume thresholds or quantities are exceeded.

Stop logic functionality. Stop logic can automatically halt the market for a predetermined time period in order to help prevent extreme price deviations. You all know when it was triggered on May 6, 2010 it was stop logic that reversed the course of the flash crash by halting the market for enough time for liquidity to be replenished and the market to retrace.

Volatility logic functionality. This is designed to guard against rapid price spikes. It is triggered by a pre-specified price movement over a short, defined period of time. Like stop price logic, it places markets in a reserve state where orders may be entered, modified or cancelled, but they may not be executed.

Circuit breakers. In our equity index and energy products, circuit breakers halt trading for a period of time when a specified price level is reached. In addition, daily price limits prevent trading at prices higher or lower than limits that are preset by the CME.

Protection points. Protection points act as a control against excessive price swings in illiquid markets. These points prevent market and stop orders from being filled at significantly aberrant prices because of the absence of sufficient liquidity.

And, kill switches. These are designed to allow clearing firms a one-step shutdown of all CME Globex activity at the most granular of levels of a market participant.

Another service that CME group provides to the marketplace is co-location. Now criticism of co-location in some of the public coverage of this issue has failed to recognize that co-location actually equalizes access to the benefits of the speed through proximity. Although co-location requires an investment, it is open to all market participants and serves to level the playing field unlike several years ago when a firm could gain an advantage by buying real estate near an exchange or where a server was thought to be in a data center.

Without the development of our co-location facilities, no one trader may gain an advantage over another -- I'm sorry.

With the development of our co-location facilities, no one trader may gain an advantage over another due to proximity to that match engine. All customers located in our co-location facility are treated equally. That is, they receive the same contract; they receive the same pricing; they adhere to the same policies and principles.

This includes redundant, equidistant fiber connectivity to the CME Globex as well as equidistant cross-connects to telecommunications carriers that get them into and out of our CME data center.

Finally, as we are all aware, the futures markets are fundamentally different from the equity markets. Many of the recent complaints against high-frequency trading and the fragmented equity markets simply do not apply to U.S. futures markets.

We believe the futures markets strike the right balance of regulating the market without inhibiting true price discovery. This balance of regulation and market surveillance, along with deep pools of liquidity in a centralized market, gives our market participants the confidence that they have come to expect as they rely on our markets to efficiently manage their risk.

I look forward to addressing the questions that have been outlined by you, Commissioner O'Malia, and I appreciate the offering of these remarks.

COMMISSIONER O'MALIA: Thank you very much, Bryan. I'd like to recognize the Chairman for any remarks he may have.

CHAIRMAN WETJEN: Thanks, Commissioner O'Malia. Thanks, everyone, for being here today. Obviously, a lot of issues and questions that people have on their minds, including our staff and both Scott and I, but I have one question, and that is: Have we created a fire hazard with all the interest in today's meeting?

COMMISSIONER O'MALIA: If we don't get the air conditioning turned up higher, we will.

CHAIRMAN WETJEN: But, looking forward to the rest of the day. Thanks a lot.

COMMISSIONER O'MALIA: Before we go to Chuck Vice, I do want to recognize -- you mentioned staff. Joining us at the table today are our Chief Economist, Sayee Srinivasan, Vince McGonagle from the Division of Market Oversight, and our Chief Data Officer, John Rogers. Obviously, the topics we're discussing today are squarely in their wheelhouse, and I'm pleased to have them joining us.

And I've seen a number of staff here today that are also involved in oversight and issues as well, and I appreciate them joining us to take the opportunity to listen and follow this debate along.

So, Chuck, if you could go ahead, please.

MR. VICE: Thank you, Commissioner O'Malia and Chairman Wetjen, for facilitating this discussion.

I thought Bryan did an excellent job of summarizing, I think, the strong points of our industry and from an exchange perspective. We've talked a lot over the years in these committee meetings about the risk controls and, I think, a lot of the good things that the exchanges do to try to maintain the integrity of its markets.

So I'm not going to rehash some of that from ICE. Like I said, I think Bryan did a great job.

So I'll come at it from a couple of other different commentary points.

It was only 14 short years ago, ICE was formed to provide an electronic venue for trading energy swaps globally. In OTC markets dominated at the time by phone-broking and dealer-to-client business models, ICE was novel in promoting central limit order book execution and transmission of all market data to all market participants at the same time. Customers chose among a variety of connectivity options, including dedicated point-to-point lines, managed networks or the public internet to suit their own cost and performance needs. Direct market access participants utilized our API to make prices and fulfill market-making obligations.

As you can see, many of the issues to be discussed today are, by no means, new but perhaps more confusing to understand and more challenging to manage in a market measured in microseconds.

Though ICE has built and bought numerous exchanges since 2000, we've never wavered from our core objectives of transparency, efficiency, liquidity and fairness, which leads me to my second point.

Our company, as you know, merged with the New York Stock Exchange six months ago, and so my colleagues -- myself to some extent, but more my colleagues -- are knee-deep in the equity markets and the issues there and reform. And our CEO, Jeff Sprecher, has been very vocal on a lot of the issues that were brought out in the book as practices that evolved over time and really need to change.

And I think there are several of these that really illustrate the marked differences between the derivatives markets and equities markets. So I want to just hit on those briefly. I'm sure others will today as well.

First of all, you can't help but notice the extreme fragmentation in the stock markets. There are 13 exchanges for executing the very same stocks, over 50 different total execution venues -- most of them off-exchange, largely lightly regulated or unregulated dark pools with prices published only after a transaction occurs.

If you look at an analog in a futures market, all futures markets have to be -- all futures transactions, excuse me, have to be executed on exchange unless they meet various block minimum requirements or other EFS or EFP requirements.

Also, in the equity markets, retail

brokers of U.S. equities typically sell their customer order flow to competing HFT firms. So there's no analog for this.

Again, we have much less retail participation in the derivatives markets, but the participation that we do have is routed directly to the exchanges.

And then, lastly, the pricing structures. Maker-taker pricing, which is the dominant pricing structure in the equity markets that Jeff has talked quite a bit about, our belief is that that has led to a lot of the problems that we have and, as pointed out in the book, people seeking to capture the rebate as opposed to paying the fee and, as a result, a proliferation of order types by the exchanges -- extremely complicated order types that effectively have conditional logic built into them so that the user of that order can either maximize his changes of capturing the rebate or minimize the chances of paying.

And, as a result, I think you end up with markets that no one is really happy with, and

I think those things will get addressed and improved.

For ICE, we don't have maker-taker pricing. We don't pay people to trade. Our market-making program consists of various discounts and caps -- pretty plain vanilla stuff. We don't have jump balls for equity, things like that. And so all of this is markedly different from what goes on in the equity markets.

I think the thing that is the same in both markets is they obey the laws of physics. And so, independent of all of those other issues, there will always be a value to speed, and a function of how fast you can access the exchange is a function of what investment you want to make in connectivity, your PC, your firewall -- a million different things.

And customers have shown that they're not all the same and they make choices along that spectrum and microsecond latency is important to some and irrelevant to others.

And I think it's important to keep that

in mind. Now that's part of the challenge. I think once we get past today, hopefully, the differences in these markets and we scrutinize the derivatives markets and we come away as confident as we've ever been, that we feel good about what's going on in those markets.

Technology continues to advance forward. You can't really put the toothpaste back in the tube.

So I think I look forward to today's discussion, and I think there will be some good ideas and suggests coming out of this about how we, as exchanges, can continue to maintain a level playing field going forward.

Thanks.

COMMISSIONER O'MALIA: Thank you very much and for the perspective on equities.

We're going to go to Rob Creamer with Geneva Trading but representing the FIA's Principal Traders Group here today.

MR. CREAMER: So, I'm Rob Creamer. I'm CEO of Geneva Trading and Chairman of the FIA

Principal Traders Group. I'm grateful for the invitation to be here today and speak to you on behalf of the FIA PTG.

The FIA PTG is comprised of firms that trade their own capital on exchange-traded markets. Our members engage in manual, automated and hybrid methods of trading and are active in a variety of asset classes such as foreign exchange, commodities, fixed income and equities. We are a critical source of liquidity in the exchange-traded markets, allowing those who use these markets to efficiently manage their business risks.

The FIA PTG does not believe that a clear distinction can be made between high-frequency trading and automated trading. In fact, high-frequency trading, however defined, is a subset of automated trading and should not be used interchangeably with the term, automated trading, or as a way of arbitrarily identifying a type of market participant.

The FIA, the FIA PTG and the FIA

European Principal Traders Association have been in the forefront of efforts to strengthen risk controls and system safeguards across the futures industry by identifying best practices with respect to risk controls that reduce the risk of market disruptions due to unauthorized access, software changes, system failures and order entry errors.

The FIA PTG believes that automated trading technology has provided many benefits to the overwhelming majority of futures market participants. More quality metrics have improved across the board as trading has become more automated and more competitive. Trading costs are lower. Markets are deeper, more liquid. Discrepancies in prices across related markets are reduced, and prices better reflect information about the value of commodities underlying futures contracts.

The FIA PTG, therefore, believes that any regulatory effort to improve market infrastructure must, at a minimum, preserve the market quality -- quality improvements that have occurred as markets have become more automated and more competitive. If the CFTC determines that further regulation in this area is warranted, this determination should be supported by solid empirical evidence and rigorous economic analysis.

The FIA PTG also believes that access to the market has never been fairer or more attainable. Access to the futures markets no longer requires you to stand in a trading pit and fight for a good seat at the table. It no longer requires membership, a family legacy or residence in the location of a trading floor.

The need for physical proximity to exchanges has been eliminated with co-location services, which are widely available to all market participants. Exchange and third-party offerings are widely available and easy to analyze. Materials are published on web sites, the web sites of most exchanges, which list the available services, costs and additional resources to help one through the process.

Co-location has leveled the playing field for firms whose strategies demand the fastest access to market data and trade execution. While it is true that firms compete with each other on speed, from a technology perspective, the location of a firm no longer affects a firm's ability to remain competitive.

For the vast majority of market participants, co-location is neither a source of advantage nor disadvantage and is not relevant for many participants in the markets.

Central to the market structure discussion has been the issue of fragmented versus centralized markets. In the equity markets, the threat of monopoly was traded for hyper-complexity. While this tradeoff was effective at reducing cost, fragmentation in the equity markets created many additional challenges that have been largely avoided in the futures markets.

The vertical silo model works well because of its simplicity, which improves the ability to manage risk. It reduces points of failure. It centralizes data and maintains a level playing field.

In addition to the inherent simplicity of the vertical silo model, the futures exchanges have made attempts to reduce the complexity and enhance the reliability of their platforms. Relative to equity markets, there are very few order types in futures markets, and exchanges publish transparent descriptions of their matching processes.

A recent article has called into question the fairness of market-making programs. Exchanges have a long history of innovation, and the development of new markets is critical to meet the demands of the complex world in which we live.

The research and development conducted by exchanges and product specialists will be fruitless without the service of market-making firms that shoulder the risk of supporting the launch of new products. Some firms have the capability and risk tolerance to support the launch of new products while others have the ability to provide additional liquidity in more mature markets to reduce cost for end users.

There is a healthy, symbiotic relationship between market-making firms and exchanges.

It is our belief that exchanges should be allowed to use their discretion in the design of the programs in order to improve market quality and support innovation. The details of programs and eligibility requirements should be made available. The application process should be clear. The requisite qualifications should be specified, and the vetting of firms should follow a structured process. This should be conducted by exchanges with sole transparency provided to the Commission while protecting the anonymity of the firms that have been vetted and ultimately enlisted.

It is my understanding that this largely reflects the process today and that the Commission is aware of such arrangements.

In conclusion, the FIA PTG believes that the futures markets are fair, have largely avoided the complexity faced in equity markets, and we support transparency and fair competition in the Commission's efforts to ensure that this is the case.

We appreciate the opportunity to be here today and hope that our comments will provide value to this Committee.

COMMISSIONER O'MALIA: Thank you, Rob. Next, we'll hear from Joe Saluzzi. And then after that it's going to be open to discussion about anything our panelists have said and open questions. Everybody knows the routine; put the cards up.

I am having a hard time seeing down on that end of the table. So, if I don't see your card, make sure you wave it.

So, Joe, wrap us up for the witnesses, please.

MR. SALUZZI: Thanks, Scott. Thanks, Commissioner O'Malia.

Thanks, CFTC, for having me here. I do

feel like a fish out of water. I'm an equities trader. So, sorry about that, folks, but I'm going to give you, I guess, an equities perspective.

What I've heard so far is futures market is great; equity market is bad. I'm not a futures market guy. I'm not going to comment there, but I will comment on the problems that exist in the equities market, and hopefully, they don't transpose over to your markets.

Themis Trading is an institutional equities broker. We trade solely on an agency basis for our institutional clients, which include mutual and hedge funds.

In addition to trading, we focus a lot of our attention on equity markets' microstructure issues over the past few years. We wrote a book in 2012 called Broker Markets, and if you want to know anything about us, just read the book.

While some have called us HFT critics, we prefer to be thought of as market structure critics. Years of regulations have helped create a fragmented equity market that currently is the focus of much debate. This fragmentation has led to the creation of time and price arbitrages that many HFT strategies seek to exploit.

While we're not sure if any of these practices are illegal, it's clear to us that securities regulators lack the surveillance methods required to police this high-speed, low-latency stock market. Their recently adopted surveillance system, MIDAS, falls woefully short of what is needed. The SEC has essentially admitted this deficiency by proposing the consolidated audit trail, otherwise known a CAT, which is still years away from being built. Essentially, securities regulators have come to a gun fight armed with a very dull knife.

While we acknowledge that HFT is hard to define, it is clear that many HFT strategies employ cross-asset strategies, including trading options, currencies, bonds and futures. This new breed of high-speed, cross-asset trading has stretched the boundaries of the traditional regulation.

While the SEC struggles with their own workload and budget constraints, it appears that the CFTC faces some similar issues. In its statement of dissent of the 2015 budget, Commissioner O'Malia stated: While slightly more measured than the November request, this budget request perpetrates the futile strategy of hiring more staff to oversee a vastly complex, high-speed and technology-driven market. This lack of mission priorities makes these wide-ranging budget requests seem somewhat random and ill-defined only because they are.

I'll leave that to you, Commissioner. Recently, the book, Flash Boys, as we've discussed already, brought the secretive and complex subject of high-frequency trading to the public. While some may dispute some of the book's facts, there is no question that the book successfully achieved what we and many others have been trying to do for the past few years -- have an open debate about our market structure.

We've heard numerous calls for top-down or so-called holistic reviews of our market structure. We submit that this would be neither productive nor effective. Correcting the systematic unfairness in the market structure can be done simply and without disenfranchising any key market participants.

The best solutions to complexity are usually simple ones. We have three that we believe can change the equity markets for the better.

Number one, eliminate payment for order flow whereby brokers sell their orders to a trading firm along with the maker-taker policy whereby exchanges provide rebates to traders who post in liquidity. There's nothing unprecedented in either of these suggestions, and markets can readily adjust and adapt. Rebates are polluting the trading ecosystem and unnecessary incentives and need to be done away with.

Number two, mandate complete disclosure of dark pool and smart order routing practices.

Without knowing how orders are routed and how dark pool policies factor in, it's hard to determine whether or not they contribute to, or detract from, the market's well-being and designated objective as a means of allocating capital.

Number three, regulate the data feeds. Trading information should not be fair game to be made available by the exchange to the highest bidder. Exchanges should grant investors the right to opt out of having their data sold to trading firms, which can then track and act in advance on information.

There's no longer any reason to continue to create exploitable opportunities from unintended consequences. What's needed are straightforward solutions to fix current problems that provide exploitive opportunities and impair market liquidity. Our markets need simple, straightforward solutions that provide fairness, that can easily eliminate inefficiencies and complexity that hobble their fundamental purpose.

Thank you for allowing me to comment. I

look forward to the remaining discussion.

COMMISSIONER O'MALIA: Thank you very much. Larry Tabb, first tab up.

MR. TABB: Thank you, Commissioner. I'd like a little clarification, Joe, on --

MR. SALUZZI: I think Larry is asking me, what about opting out of data feeds that I just mentioned?

One of the issues that we have with data feeds, particularly in the equities market -- all my comments, by the way, obviously, are equities market-related.

Data feeds are not only fast. Well, we all know they're fast, and we all read the book about how the latency and 350 microseconds and the Lincoln Tunnel and all that stuff. Right?

We get that. They also contain a lot of content, okay.

Content is king, as well as speed, okay. Content, from an institutional investor's perspective is extremely critical. I would like only the information that is visible on the consolidated tape to be shown in these data feeds. In other words, why would my order that's just gotten cancelled need to be shown? Why would a revision need to be shown in the data feed?

A couple years back, we wrote a paper called "Data Theft on Wall Street." I guess a lot of you guys don't like the topic.

But, the bottom line was we found that the two exchanges in particular were giving out hidden order information. There was a flag attached to each one of these orders, and that flag basically allowed someone reading the data feed to reengineer the fact that there was a hidden buyer.

Well, after our paper went out there, it took a couple of weeks and actually kind of stalled in the U.S. But in Europe they got a hold of it, and lo and behold, a few weeks later these practices were fixed.

My point is, as an institutional investor, I don't want the exchange to have that ability to sell that information. It's my information. It's my clients' information.

But you do need, obviously, the basics of, obviously, price, time and so on.

But we think limiting that and allowing the institutional investor to at least opt out of that is a good suggestion.

MR. TABB: So what kind of information are we talking about?

They're not doing the hidden order information anymore. So you wanted them to opt out of providing cancels --

MR. SALUZZI: Well, we don't know exactly.

MR. TABB: -- and rebooks?

MR. SALUZZI: But there's a good point there, Larry.

I don't think there's been much work done on data feeds and content, and we would actually like to see a study as to what's in some of these data feeds. They're very cryptic. Obviously, they're all available online, and you can see the NASDAQ gauge and so on.

We would like the basics of information. Why would you need to know when my revision took place when that order that's sitting on the book, which you can't see with the visible eye, has now been revised?

You're giving out more information that the user didn't ask to be given out.

COMMISSIONER O'MALIA: Is there any way that that cuts both ways, that more data -- you know, a lot of our rulemaking has been to disclose more. Right?

You know, publish more. Disclose more. How does that -- I could see where an argument could be made that it cuts both ways, that too little information isn't informative of what's in the market and your point being that --

MR. SALUZZI: Look, the basics still need to be there. Absolutely, when a trade takes place, we see it on a consolidated tape. When there's a quote being put on there, we should all see that.

But I guess it's the personal

information that's being given out about that particular order that needs to be -- there's a linkage there between the order and the trade books that needs to be adjusted, or addressed, rather.

COMMISSIONER O'MALIA: Can I get maybe somebody to comment from either CME or ICE? Maybe Julie or anybody?

What is the content of the futures market, and are the concerns that Joe raised similar to what we have in our market?

You mentioned, Bryan, that we have one single data feed that goes out.

MR. DURKIN: We send out an aggregated feed of the price and quantity that comes out -- bids and offers; that's it.

COMMISSIONER O'MALIA: Nothing -- none of the cancels or some of the things that Joe raised?

MR. DURKIN: We don't do it by the order. We don't provide all of that information. That's correct.

MR. SRINIVASAN: I have a question. So the exchanges do sell tick-by-tick data, right, from what we understand. So tick-by-tick data, as we understand, is every message and order submission, modification, cancellation. That's something that especially I think some firms can acquire from the exchange and get it on a real-time basis.

MR. DURKIN: We provide tick-for-tick data that's price changes.

MR. DEWAAL: Just a question. I'm just curious. One of the hallmarks that has been highlighted about the futures market that sort of protects it is the lack of fragmentation.

I'm curious, Bryan and Chuck, in particular, your views on the introduction of SEFs and perhaps the introduction of MTFs into the regime. Does that create an opportunity for fragmentation that will bring some of the issues that we discussed about the equities markets to the futures and swaps markets?

MR. VICE: I think it's certainly

possible. We haven't talked about it really in the rulemaking for SEFs, and now the SEFs are out there. There's been no talk of any kind of best bid or offer system.

You know, with a RFQ of one and a dealer-to-client models still alive and well, I don't know that -- you know, it may be that it doesn't get to that point. That's a topic for the third session, I suppose.

But I think if there is success in seeing more central limit order book trading on SEFs, then, yes, that's something that presumably going to have to be addressed.

But if you think about -- you know, one thing you have to put in perspective with the HFTs -- I mean, we have hundreds of futures contracts. We have HFTs in probably 20.

It's a very liquid market type of trading. I mean, they help make it liquid, and they can only participate because it can get to that level of liquidity.

I don't know if interest rate swap --

I'm not an interest rate swap expert.

Does that market get to a point that you have the kind of HFT activity where the interaction of the different SEFs and different resting bids and offers rising to the problem of people are racing from one SEF to another, as described in the book?

More questions there than answers, but that's --

MR. MCGONAGLE: Thank you, Commissioner. So most folks might notice I write furiously, but that's just to keep my attention. Listening to just the past 50 minutes, going through pre-trade transparency, ATS, HFT -- should they be defined?

Registration -- I don't know. Content of trading activity during the day -- what are we doing with messages? Should message information tick data? How that information should be available to market participants? Co-location -- do we have it? Does it work?

Should we do something else? Market-maker incentive program. So each one of those topics seems like we could spend an awful lot of time digging down. And we did the concept release; I get that.

A lot of discussion. Nine out of eleven on HFT. So I think, sitting here, about the case for change in these discussions that we have surrounding. And are we circling the wagons with respect to trading activity and derivatives markets because folks are saying we do such a good job as compared to the equity markets?

And what lessons can be learned from that activity?

So where's the case for change? Where should the Commission interact with the market on mandating certain risk, pre-trade risk controls? Whether we should impose some registration regime -- what benefit do we see for that registration regime? Should we be asking the Commission to consider making available the exchanges making more information available about the types of trading?

On co-location, should we be asking --

and I'm just putting all these questions out, and then I'll be quiet.

For co-location, should we be interested in seeing latency?

What's the publication of the latency for the different uses, the different access to the various futures markets?

How does that compare by exchanges? Should we require that all exchanges, separate from impartial access, establish a co-location facility rather than doing it on exchange?

And then, particularly, this market-maker incentive program -- I was interested in the comment about, all right, we'll start up for new markets and then maybe market-maker for mature markets. Does that work when the markets are highly liquid, and what do we do with these rebate programs?

How transparent should we require the exchanges to be about the types of participants that are actually reaping benefits and the amount of proceeds that are being paid as part of these market-maker incentive programs?

So these are the types of questions that I'm hearing, going through the course of the presentation.

Where is the case for change for the Division of Market Oversight?

Where is it meaningful for us to come in with an opinion?

MR. LORENZEN: Chris Lorenzen, Eagle Seven. Both Bryan Durkin and Chuck Vice earlier made statements referring to the fact that futures markets are very different from the equity markets. I think it's extremely important to point out some of the main differences between the two.

Futures markets have a single transparent point of execution whereas on the equity markets trading takes place in numerous exchanges, dark pools and ECNs.

Futures exchanges offer limited common order types. In the equity markets, one will find numerous and unique order types being used.

Pricing. On the futures exchanges, all prices are visible and executable by all participants. This differs in the equity markets where not all prices are transparent due to such things as sub-penny pricing and dark pools.

Common practices in the equity markets, such as payment for order flow and internalization of orders, are not prevalent and part of the market structure in the futures markets.

These important points help lay out the differences between complexity and simplicity when analyzing equities versus futures markets.

MR. HASBROUK: Thank you, Mr. Chairman. Joel Hasbrouk from New York University. I want to connect a couple of dots here because the themes sometimes arise and with different words and terminology.

So I was struck by Mr. Durkin's presentation stressing the equality of the way orders were treated and handled in the Globex matching engine.

I was also struck by Rob Creamer's

subsequent point that market-making firms are entitled to the advantages that they enjoy.

Now you can't have market-maker subsidies and all orders being treated equally. I'm not arguing one way or the other, but there are tradeoffs.

And the third dot is Mr. Saluzzi's point about disclosure and maker-taker fees. Maker-taker fees are, after all, also another form of market-maker subsidies, and the same principles that make market subsidies good on the futures markets might also make them good in equities markets.

My last point is that, with respect to selective disclosure, to argue that there should be more disclosure for dark pools and simultaneously allowing individual traders to opt out of reporting certain information about their trades is -- you know, I'd be curious as to what principles we should allow there to justify the difference.

But I think one thing that we could

agree on would be that informational asymmetries are bad. You're giving somebody inside information. So whatever information is getting disclosed should be disclosed to all people as equally as possible.

Thank you.

COMMISSIONER O'MALIA: Thank you. Bryan, do you want to respond to that?

MR. DURKIN: Well, I would invite you to spend some time with the CME Group so that we could give you a more in-depth understanding of our market model and our market structure. So I offer that out to you because I think you were confusing a few terms that were discussed here today with respect to orders being treated equally.

I assure you, sir, all orders are treated equally in our system and in our matching engine. When an order comes in, it goes immediately into the system. If it's at the current bid or the offer, it is matched appropriately and according to very transparent algorithms that are very well described on our web site.

In terms of market-maker programs and incentive type programs, you have to be very careful not to confuse the differences between what occurs in the equity markets and what occurs in the futures markets -- very careful distinction between the two of those.

In the development of incentive programs or those types of programs in the future markets have always been based on developing liquidity in new products and evolving markets. So it's bringing market participants into a system to help them build a marketplace and help develop liquidity in a marketplace.

There's very transparent criteria that participants in those programs must adhere to. The programs themselves are posted on our web site. They're filed with the Commission for approval. There's prescribed criteria that people need to meet.

But the fundamental premise is to

develop and build markets and build liquidity. That has nothing to do with how the orders, when they come into the system, are treated by the platform.

COMMISSIONER O'MALIA: Bryan, I believe CME has nine separate order types.

MR. DURKIN: Seven.

COMMISSIONER O'MALIA: Seven. Similar --

MR. VICE: Yes.

COMMISSIONER O'MALIA: And --

MR. VICE: Single-digit.

COMMISSIONER O'MALIA: Okay. And on the equities, do you have a sense?

MR. VICE: Let's just say well over 50.

COMMISSIONER O'MALIA: Okay.

MR. VICE: I would guess 100. I don't know. I'm guessing, but I know there's more than 50.

And New York Stock Exchange, again, in trying to take a first step, on our least earnings call, Jeff announced that we're trying to scale those back. Some things we can do unilaterally. Other things have to be more of an industry or the SEC saying that it needs to be done. But we're at least retiring 15 order types.

So it's a very small step, but it's a step in the right direction, I think, to try to get back to I think what Joe said. Simplification is part of the answer here.

MS. ALDRIDGE: Yes. Hi. It's Irene Aldridge from Able Alpha Trading.

I think that what we've learned at the last meeting, or during the last meeting, that it's very difficult to agree on philosophies of trading -- manual is better than automated, et cetera.

But, however, we can all agree on a few basic principles; that is, that market manipulation is bad in whatever form and that crashes and other market disruptions are bad.

And to Mr. McGonagle's comment, I think the key thing that I'm very excited to see on the second part of today is that the Commission is already focusing, and we should spend more attention on is really market surveillance.

If we have strong market surveillance that can detect a sort of activity, or a kind of undesirable activity, and potentially detect runaway algorithms and predict risk events, market disruptions and even track high-frequency trading, given the currently available information -- and there is a lot of new research that has come out in the last year that allows us to do that -- I think everybody will feel that there is more confidence in the markets.

And if it's a scientific approach that creates more transparency, everybody will be more confident in what is going on.

Obviously, there are some issues with surveillance that are, I guess, going to be discussed in the second part, such as whether pre-trade is optimal or run time is optimal or post-trade is optimal, and there are some time sensitivities to various of these issues.

But the bottom line is I think the Commission is on the right track and it's the surveillance that's really going to unite, if you will, different parties and further strengthen the confidence that the markets are rally functioning the way they should.

Thank you.

COMMISSIONER O'MALIA: I'm going to call on Cliff, and then I'm going to go to Mr. Lothian, Concannon and then Keith Fishe.

MR. LEWIS: Three points. First point, just I think it's worth remembering that one of the big changes in the futures industry is when the exchanges -- exchange clearinghouse verticals -- became public companies, for-profit public companies, and were no longer controlled by their members. It fundamentally changed the landscape in terms of incentives.

Now Chuck's and Bryan's colleagues have a fiduciary responsibility to their shareholders to maximize revenue and no longer provide, let's say, special privileges to certain market participants. They would be subject to the plaintiff's bar who is always enthusiastic about bring suits against public companies for not maintaining their primary responsibility, which is maximizing shareholder value.

That was not the case previously, nor does it exactly fit even though many of these are private companies. Many of the exchanges, so-called, in the equity market are actually owned by market-makers. It's quite a different market structure between the two that's a pretty fundamental difference.

Second point is -- and I've said this before, but I just want to make very clear -- that the co-location problem that people talk about is very simple. It's the co-location of a sensible market structure, as is the case with derivatives, with an insane market structure that was designed by GS-14 lawyers in the securities market.

And the major take-away for the Commission should be you guys have it right; they have it wrong. They should change; you don't have to change.

And, in fact, I would say as my final

point that the biggest threat to the market -- and this is particularly prevalent given that we're talking in a very low volatility, frankly, low interest rate environment, low inflation environment, which is not going to last. It may go on for years. I'm not making any bets.

But I think we need to all be thinking about what the next crisis is.

And the next crisis, I think, is actually being promoted by the Commission, which is abandoning its traditional approach of principles-based regulation for SEC-style prescriptive regulation, by which -- the way those GS-lawyers created

the problem was they

didn't know anything about markets. They didn't think like economists. They thought like lawyers, which the principle is to employ more lawyers, right, not increase liquidity.

The question, I think, that the Commission needs to worry about is not that HFT guys are too powerful. On the contrary, I think it's almost the opposite problem, which is where is liquidity coming from in the future that helps stabilize markets?

Where does the speculative interest come from in the future when markets go volatile in the face of hugely increased costs being imposed on those market participants?

I think that's the scary thing -- is that there will be insufficient HFT to handle the requirements of a more volatile interest rate environment. So that's the threat that I think we ought to worry about in the derivatives market.

MR. LOTHIAN: I wanted to ask Mr. Saluzzi about his point number one about eliminating payment for order flow.

It has been suggested to me that you can't ever eliminate payment for order flow, that it's a little bit like outlawing prostitution. You can make it against the law, but you can't eliminate it.

Historically speaking, there's the payment for order flow that you would see on the books, and then there are also incentives that are offered to those decision-makers who are the ones that are directing that order flow.

You know, to say that there's not payment for order flow in the futures market is correct in an electronic market, but historically speaking, if you were ever around the trading floor at Christmas time, you would know that brokers rewarded trading desks and clerks and runners very handsomely for the order flow that they directed them.

The difference being is that the brokers were executing orders. They were brokering and filling those contracts. They weren't on the execution side of receiving the benefits of the trade.

And, in terms of you mentioned future markets, good; equity markets, bad, okay, yeah.

But, historically speaking, there's been a bias in the markets that if you go back to when I came into the markets, in the specialist market, the things that they did on the New York Stock

Exchange with that model, if you did that in the futures market, would land you in jail. Okay.

And so there's some very historical kind of differences and biases that I think have delineated those two markets and made practices different.

There are some of the same incentives. You know, we all want the order flow to come to us.

But I'd like to ask you, how do you think you police it when it's just going to go underground?

MR. SALUZZI: Well, I mean, that's a question for the regulators, obviously, in how can they police it.

And I think John brings up a point about the 90s, and we all know the pictures of the specialists getting carted off in handcuffs. Well that was a problem with regulation. Okay.

They're going to take advantage. People are going to do what they can do as long as no one is looking. Right?

So I think, just like we had then, we have a similar problem now except that the floor has now been transferred to server forms. Right? And now it's harder to even spot where these maybe potential problems are.

But when it comes to payment for order flow, there are certainly two that we focus on.

You know, the maker-taker is a no-brainer in our opinion. Get rid of it. The exchanges are paying for order flow.

But I don't want to take away the exchange profit because they need to make money. Right? We get that.

So, if on average it's a 10 mils spread, let's just call it 10 mils to make, 10 mils to take. I'm more than happy to pay them. Right?

That should be their fee for putting those buyers and sellers together as opposed to now where a rebate could be maybe 35 mils if you're a high-end client and a take fee is maybe 28 mils.

Well, let's just flatten this thing out

and call it what it is. Okay?

So there you don't have that incentive anymore to go to -- what happens, obviously, is the broker-routers are going to certain spots, or at least they were, and maybe they still are. We're still not sure on that. Depending on where the payments were highest. Right?

So, if you get rid of, one, maker-taker, you're getting rid of some of the problems.

But, two, the payment for order flow where brokers are selling it to market-makers is a big issue that no one seems to want to talk about. It was addressed in Michael's book. But that's where we think price discovery is getting distorted.

And just as an easy example, just say you're in your own retail account and you're bidding 10 cents for 500 shares and you want to buy this stock. Well, if someone wants to sell you that 500 shares, he hits the button, sells it to you. But instead, you get nothing, and they get it at 10.0001, and that's considered price improvement for the seller.

Well, what's not talked about is, what about the disadvantage of that buyer who was sitting there, wanting to buy stock and basically got disenfranchised and stepped ahead of by that internalizing broker?

Well, what most likely happens is then the model -- the order flow is modelled. We all know how this works. And, possibly, that buyer ends up paying 12 cents or 15 cents.

So who got hurt? You know, did the subpenny price improvement mean anything to that seller of 500 shares? Or, did the buyer now, who has to go pay up, really get hurt? So, when we talk about off-exchange volume -- and a lot of people toss the 40 percent number around -- part of that is dark pools, but a good chunk of that is these internalization market-makers.

So, for us, to get a true price discovery, get rid of all these payments; have the buyers and sellers meet. You may widen spreads a bit. Okay?

It may happen. It may not. But we don't know. So that's why we actually do applaud the SEC at this point for looking into pilot programs. Those are necessary. You want to do these steps.

You don't want to do it right away, like we do with Reg NMS, and we just roll the thing out.

Maybe there's a pilot program. I'm talking about the wide tick pilot program now. Right?

That's a good idea. Let's bucket them into two different ways.

Does it make sense; let's have a maker-taker elimination pilot program?

Let's start to look at these things, but let's not wait any longer. You know, we've been talking about this for years. Two-thousand and seven was Reg NMS.

What year is it now? Right? How long is this going to continue?

COMMISSIONER O'MALIA: Chris Concannon.

MR. CONCANNON: Thanks, Commissioner. I thought I would try and respond to Vince's question around what action could the Commission take. I mean, I do appreciate coming to the CFTC and learning so much about the equity markets. It's been very helpful and illuminating.

Apparently, the equity market is bad; the futures market is good. We can all go home.

And, Cliff, for the record, I was a GS-13 and had something to do with that market structure you complained about.

First, you know, in terms of risk controls, I think that's one area where the Commission has an opportunity to take action that is actually protective. We have the exchanges in the futures world that has, in fact, provided exceptional risk controls, exceptional behavioral controls.

But with respect to an individual firm that has connectivity to an exchange in the futures world, the exchange doesn't have the full picture of that firm's risk. Only the firm has the full picture of that firm's risk. Only the firm knows the full picture of its behavior -- the behavior that's appropriate for that firm.

And so we can rely on the exchanges today. I don't think there's this looming risk out there.

But I do think that each individual firm can define its true risk controls, and those risk controls can be overseen by the exchanges, by the regulators or even by the CFTC.

So, in the terms of risk controls, if there is a firm connecting directly, whether through co-lo or a physical connection to the exchange, it should have appropriate controls before the orders pass into the exchange environment. These are firms that have computers. They are trading with computers. We have that nowadays.

And I just think that that's one simple step that the Commission can act on to add further protection.

And when I talk about risk controls, I'm talking about not only credit risk controls but behavioral risk controls -- sending too many orders, sending too many messages. That's defined by what's unique to the firm, and it should be something that's the responsibility of the firm if they choose to connect directly to the exchange. If they want to go through an FCM or another intermediary, that member would then have those risk controls obligation.

And this is a model that has been adopted in Europe in cash equities by ESMA. It's been adopted in Australia, Canada and, yes, on the equity side, by some GS-14

lawyers who actually wrote some risk controls rules. So there's models that the CFTC can look at and be informed by. They don't need to be prescriptive. They can define several minimum levels of control. And it's a fairly simple principle-based rule, to Cliff's point.

I just have one more question. Joe, you had mentioned in your point about the surveillance of the U.S. equities market, that you had some concerns around flaws around that system.

And I agree with you that there are some improvements that should be made, and the consolidated audit trail is coming, taking a while.

But I want to understand exactly, what is the flaw? You have folks here from FINRA that largely surveil all of the U.S. equities. Options are surveilled, and data are shared from futures to equities.

And I'm trying to understand, what is the flaw in the U.S. equities surveillance system that you're so concerned about?

MR. SALUZZI: Sure. I appreciate that. And I think the current system, MIDAS, which was obviously built by an HFT firm, is a system which tracks --

MR. CONCANNON: No, I'm sorry. I'm not talking about MIDAS.

MR. SALUZZI: Okay.

MR. CONCANNON: I'm talking about FINRA, which surveils the U.S. equity market.

MR. SALUZZI: Right. We currently have OATS, which is a good spot. Right? You're getting it.

And I think the consolidated audit trail --

MR. CONCANNON: No, it's not OATS. FINRA runs a surveillance system that takes the full depth of book and surveils the full depth of book, separate from OATS.

MR. SALUZZI: I think what we're looking for is more in the way of routing -- where the orders are being routed, at what point they're going through, are they -- what the consolidated audit trail is trying to do. Okay?

But, from a user level, it would be nice as well. And I think the one fault of the consolidated audit trail, if it ever does get built, would be that it doesn't go down to the user level. It's going to be down to the market-maker ID.

So, in other words, if I was a sponsoring market-maker and I had 30 firms underneath my umbrella, I think it's going to be pretty difficult to identify the actual user who may be using some, let's just say, nefarious behavior.

Let's just say there's some spoofing going on. Will I be able to tell? I don't know.

We want to get it -- drill it down to the actual user.

Why not? It doesn't seem like anybody -- and I think one of the criticisms there was from some folks saying, well, if the regulator had that level of detail on my activity, he could then maybe leave the regulator and go to a private firm and then know what I was doing.

And I think that's a ridiculous argument. I mean, that's an absolutely ridiculous argument.

So you need to drill down to the actual user. You need to figure out if there is spoofing or banging the close or whatever these things are that are actually going on out there. I think it's pretty -- it's not much to ask.

COMMISSIONER O'MALIA: Can I -- I want to get a response to your other question. You were talking about direct market access, and this is actually a futures term.

And this was a question that we asked in the questions to all the Commission -- to all the TAC members. So I would like to have either Chuck or Bryan, or both, to touch on:

What are the exchange policies and procedures for direct market access?

What risk controls are in place today, and are they the same for all participants, or do they differ by self-clearing members and clients?

And should there be a minimum standard, as Chris raised, or a registration required for direct market participants?

If we could kind of tick some of those off, that would address some of the things on our list.

MR. DURKIN: First of all, as an exchange, we support clearing members allowing for direct market access, and we hold any participant, including those that have direct market access to our platforms, accountable and are required to adhere to our credit control requirements.

So we have pre and post-trade credit controls that have been adopted by CME Group, and we require every single one of our clearing firms to abide by those controls.

There is a customer acknowledgment agreement that is signed, and it must be signed and authored by both the participant that's having the access as well as the clearing firm. And they ascribe to, and commit to, ensuring and validating that all of those credit controls that we require are in place and adhered to.

We also require the direct market participant themselves to subscribe to conformance testing. So they don't come into our system blindly in any way, shape or form. They adhere to those same criteria and principles that we hold all of our market participants to.

Ultimately, the clearing firm is financially liable for anything that occurs or a misstep, and that's part of the overall authorization to allow that type of access to come into our system.

In terms of registration, you know, we have that granular level of registration. So I can tell you I know every single participant that's bringing every single order message into our system every single day, all day, down to that granular level.

So we also have a criteria that requires, under our Tag 1028, an identifier to see whether or not a message has come in through manual or automated means.

So we know the individual participant. We also know the style and the way in which the order came into the system. And we have every single message that comes into our system, every single day. And that information feeds itself into a surveillance system.

I just have to mention about the consolidated audit trail. So I'm sorry to be a little bit redundant, but you know, in these markets, we have 100 percent of the activity that comes into our markets every day. That information is used to feed very meticulously designed surveillance systems.

For example, what occurred on May 6th, we were able to have a full accounting of what occurred in those markets to the CFTC. I think it was 11:30, maybe midnight, by that evening, but we were able to give you a full accounting of the activity that occurred in these markets, message by message.

CHAIRMAN WETJEN: Bryan, I'm just curious. You don't have to get into all the detail, but in surveilling the risk controls of the firms that have direct market access, how often do you look at compliance with what they've agreed to along with the clearing member?

Like just generally speaking, what kind of program do you have in place?

MR. DURKIN: Through our audits team, it's incorporated in terms of their financial risk audits. I don't know the exact rotation, but I believe that they're hit every year in the context of validating the risk protocols and the risk procedures of the current firm and those that are clearing through them.

MR. VICE: I mean, I don't have a lot to add to that. Our processes and procedures are largely identical.

I think we don't have any situations where we're investigating something, or somebody has complained about something in a market, and we're at a loss for data; we don't know exactly who it is; we don't have granular enough information to figure out what is going on. We just don't have anything like that. It's not a problem.

COMMISSIONER O'MALIA: So we put forward our testing and supervision document, a concept release. We talked about direct market access. We talked about controls in place.

I would assume -- and it's clear from the document -- that ICE and CME do not have identical kind of risk management tools. You have similar but not identical.

So, if the Commission is thinking about establishing or federalizing controls that you already have in place, how do we think about enabling both sets of controls without trying to overreach and create a one-size-fits-all solution?

What advice do you have for the Commission?

MR. VICE: I think Cliff or someone mentioned it earlier; remain as principles-based as possible.

I think getting prescriptive on this is a bad idea.

And what we're doing today -- I suspect we'll be doing something differently tomorrow. We will continue to try to improve. We are layering more and more both pre and post-trade risk controls.

I mean, Bryan and I are cordial. We compete fiercely in this marketplace, and we watch what each other is doing, and we watch what the market-making programs, each one, has. We're probably each other's best policeman about what is going on. I think it also spurs us both to improve what we're doing, particularly on the technology side.

So I don't -- you know, I would urge you; please do not get prescriptive, whether it's risk controls or something else we talked about in these meetings, matching engines and discrete auctions and should it be a continuous market, or should it be -- maybe. I don't know.

I mean, there are a lot of -- you know, there are very liquid futures markets, and there are very illiquid. And what works in one doesn't necessarily work in others.

And I think if you leave the exchanges there under your regulation, in full transparency of what we're doing, to improve whatever problem there may be -- I think ideally that's the best approach as opposed to trying to get in a room, write down on paper what the ideal, optimal solution would be in a vacuum and then hope that when you implement it in the real world it actually works the same way.

MR. DURKIN: Just one comment, Commissioner. It's your work and this team's work over the last few years when you take a look at the controls that we've articulated today. Yes, there's a number of these that we've had in place for a period of time. There's been some that have evolved as a result of the work and the effort of the group around this table. So that's, you know, a testament to the futures markets and our ability to evolve and continue to adapt and innovate as these markets continue to innovate.

COMMISSIONER O'MALIA: I would point out this was the very first meeting we had -- was on risk controls -- and Michael Gorham ended up bringing together a consensus document on what the Commission should do three years ago. Four years ago now.

So I'm going to -- Mr. Chairman.

CHAIRMAN WETJEN: Can I ask the same question of you, Chuck?

If you're ensuring for compliance, with whatever risk controls, those who have direct market access in the exchange, what do you, generally speaking? Like how do you monitor that?

MR. VICE: I think, as Chris pointed out, there is a limit to what we can do.

I mean, we don't go into their office and ask them to demonstrate behavioral checks over what are too many messages or what you're doing in this market relative to ours.

We have -- you know, when they initially come into our markets, they have to pass a battery of conformance tests. When we have major upgrades to the system, software releases, they have to repass those conformance tests.

In the pre-trade risk controls that are administered, there are single order size limits, net long-short by product, absolute long-short by product. So, all the different options, different risk limits set for options. So, as many different kind of controls that we can put around that.

And it's important to note that those controls are the clearing members' controls. The clearing members set those for the HFTs. So the HFTs are not setting those for themselves.

Maybe that's stating the obvious, but it's important to note that.

So we really -- you know, it's only the clearing members' responsibility that they're taking that risk and clearing that firm. We're providing exchange-level controls, and then largely relying on the clearing firm's relationship with the HFT because the clearing firm and the firm level should both have their own controls aside from the exchange-level controls.

COMMISSIONER O'MALIA: After Sayee makes a comment, I'm going to go to Keith Fishe. Walter Hamscher had his sign up, Larry Tabb after that and Steve Joachim and then Richard Gorelick and then Brad Levy.

MR. SRINIVASAN: This is a question for Chuck. Bryan was mentioning what we call the ATS flag, I guess. That's there in the data we get from

CME. I'm curious to learn, what are your plans? Is ICE planning to have market participants submit a similar flag?

MR. VICE: Honestly, I can't tell you if we have that exact flag.

I mean, we have an exhaustive authorized trader management system. I think we've done some presentations here before, and Trabue can speak to it on the next panel, but you know, we have very detailed information on who is the firm financially responsible for this order, who is the individual that's working the order or at least responsible for the computer that's working the order, so if we have to get in touch with somebody.

So there's -- this is all -- this isn't order by order, but this is set up for the idea that on that order we can map that back to our authorized trader management system, and we have all of that static information about who that person is.

Whether order by order, it's flagged as

from an ATS or a human, I honestly don't know the answer. Trabue would have to answer that.

COMMISSIONER O'MALIA: Keith.

MR. FISHE: Thank you, Commissioner. I'm Keith Fishe from Trade Forecaster Global Markets, and I've served on the Subcommittee for Automated and High-Frequency Trading.

I want to go back to something that Joel raised and then Chris commented on, and that's the issue of equal access. Equal access doesn't mean equal cost, and so trading cost, as Rob alluded to, might be -- you might be incented to help support a market, and those same incentives may not flow down to the retail guy trading from home.

But equal access is a very important thing, and I think the exchanges do a very good job of making sure that the demand for access in all types, co-location and otherwise, is satisfied by their ability to supply it. And that's something to look -- you know, I'm sure they have to balance to their shareholders as how much excess capacity that they build out so that they can meet emerging demand.

But the nature of access, you know, is pretty important. And I think that if we look at the equity side, where they developed the model of sponsored access, I would really hesitate to adopt a similar framework on the futures side. I think that the intent of sponsored access was to move firms to a more controlled environment, but that basically reduced competition for providing liquid markets and created other frictions in that whole microstructure environment.

COMMISSIONER O'MALIA: Keith, do you want to touch on what those frictions are because if we've got direct market access and sponsored access when does it become too much?

MR. FISHE: Well, so direct -- so, if you model after the equity market and you go down the path of sponsored access, you're increasing the latency, essentially, of someone trying to provide liquid markets to those various exchanges.

So a firm that might have been very well suited to provide markets, if they were directly connected with the proper risk controls and proper vetting and proper conformance testing for those exchanges, has basically now been shut out of the market by having to route through another entity in order to do that.

You know, I'm sure there -- you know, that doesn't necessarily affect firms whose business model isn't to do that, but it changes the competition landscape on the equity side, and I would want you to very carefully look at it if you were going to do that on the futures side.

But going back to access issues, you know, the features, choices, specifications are very transparent, and I hope they continue to be transparent for access.

And I, again, repeat that regulatory initiatives or exchange initiatives for access issues should not create unevenness or, specifically, should not create institutionalized unevenness between participants.

There's another issue that came up in terms of timing differences, and I don't think that this is really talked about a lot, but the question is whether there are timing differences between order confirmations and how they're received between participants. And my understanding is that there really is an effort to get that information out to participants at near concurrency, if not at the exact same time.

But the question comes up because there are differences in people's responses to that information. And I'd like to suggest that really there will always be differences, always be timing differences in how people process information and then act on it, and it's a systemic quality of the market, not a systemic problem.

You know, I think that that issue --

COMMISSIONER O'MALIA: On that point, why don't we just have Julie with CME, who's responsible for the Globex and making the changes in the latency between trade and confirmation, address this question directly?

MR. FISHE: Hi, Julie.

MS. HOLZRICHTER: Thank you for asking

that question.

It's a great opportunity for, I think, us to really explain what I think a lot of people don't understand very well, and that is there's a very big difference between I think what you hear in the media about different market data feeds, where certain individuals can pay for a proprietary feed that's faster than the consolidated feed, and a trade confirmation. And I want to kind of explain the two very, very quickly and move on.

So I think for an average investor, whether you're sitting at home, whether you are a commercial investor and you are co-located in a high-frequency shop, you are looking for the same thing, and that is when you're sitting at your computer you're looking to make sure that when you put an order in you get some type of confirmation that it was filled, that it was acted on.

So, again, even the grandmother sitting in her home, who's buying one share, is still waiting to get that confirmation that says, yes, you were filled. That is a trade confirmation. That is the information that goes back directly to the individuals that were part of a trade.

There is market data. That is a separate type of delivery of information. That information goes to the whole world.

So, when we talk about the fact that we have one market data feed, you're not able to buy or purchase a faster data feed, we're talking about our market data feed that goes to the whole world. We provide it in one way. You can choose to receive it in multiple ways -- all very transparent. But we push it out our door in the same, exact way, and we don't offer different types of services based on how much you're willing to pay, at all.

Trade confirmation. We'll go back to that. Every single time there is a trade that occurs in a match engine, it's not always a one-for-one, as we know.

But when a market data message goes out -- because, Joe, we don't do market by order -- we aggregate the information.

So, on the market data feed, you might see a 10,000 lot just traded. But guess what? For the trade confirmations, you are sending out potentially 10,000 individual confirmations, or 5,000 if you just want to say they were buyers and sellers.

So, when we talk about the fact that there is inherently going to be variability, it's because of just pure, basic physics and technology.

So these are not the types of things that I think when you hear about them -- and what I think the Flash Boys book was referring to was the market data, the information that goes out to the whole world. You get different options for how you receive it.

I think the information that's been discussed recently with CME Group and confirmations is different.

And I'm not saying it's right or wrong. I'm just saying it's really important that we understand that they are two completely different things.

And it's very important to understand that trade confirmations go back to only the people that were involved in the trade; market data goes back to the whole world so the whole world knows what trade occurred.

Having said that, for the last -- you know, I've been with CME for 27 years. So I've seen the evolution of open outcry to electronic trading to co-location to faster markets to demanding, you know, different types of products and services.

And I'll say that this evolution is not new. This whole idea of constantly improving your technology and constantly understanding what the needs of our customer base and making sure that we're, you know, bringing those two closer and closer together -- this is an ongoing project that's been years and years and years in the making.

So I'm very comfortable that, you know,

it's a focus for us, always has been a focus for us and will continue to be a focus for us, and I'm very confident that I can say the same for pretty much every exchange out there with respect to technology and enhancements to technology. Some may act on it, you know, a little more quickly than others, but it's part of being a technology-based industry.

So that's all I'll say.

COMMISSIONER O'MALIA: Walter. Walter has been patient. Representing the SEC, he might have something to say now.

MR. HAMSCHER: Yes, I'm on the Data Standardization Committee.

What intrigued me very early on, Joe, your very counterintuitive remark that maybe it would be better if less market data were available.

And the reason it's so counterintuitive to me is I'm part of the division in the SEC that is the Division of Economic and Risk Analysis. As we try and do an ever better job of understanding market behavior, trader behavior, we're very much hampered by the lack of transparency in market data. So I understand that some uniformity would be a good thing.

What I'm -- and I appreciate Bryan's sort of forthright description of the relatively limited amount of data, price, orders.

What I'm wondering is, though, are there not other commodity exchanges that are providing more, and does that provide an opportunity for arbitrage?

And that conversation seemed to be starting this morning, and I just wanted to hear from ICE and other market representatives whether, in fact, there are substantial differences in the amount and type of market data.

Thank you, Julie, for your elaboration of what is available to whom as a good explanation, but I'm just curious about the other markets that the CFTC regulates. And is there asymmetry in the amount of information provided by markets, and is it significant?

So I'd like to start with ICE.

MR. VICE: Sure.

MR. HAMSCHER: -- to speak to that.

MR. VICE: Sure. So on several of those topics -- so we have -- as Julie said, ICE has one price feed. There's no premium feed that anyone gets.

We are order by order. Our markets -- you know, we have both futures markets, and we've had OTC-cleared bilateral markets on the same platform. And so there has been historical need to actually have more information on orders, where an order -- given who the counterparty -- or the trader was that was receiving the order may be executable, may not be, on a bilateral basis.

So we are order by order. We have a price-level price feed as well that we are considering moving to now, which would reduce some of the data that Joe's alluding to, specifically order by order information. We may move to that, but historically, we've been order by order.

COMMISSIONER O'MALIA: Walter, does that

answer your question?

MR. HAMSCHER: It does although there are other commodity markets.

COMMISSIONER O'MALIA: I think maybe in the next panel we can talk about some of the cross-market. I mean, obviously, the relationship between equity markets and futures markets, derivative markets.

MR. HAMSCHER: I'm not defending equity markets this morning.

COMMISSIONER O'MALIA: No, no. Nonetheless, I mean, that is --

MR. HAMSCHER: I'm genuinely curious about how this works --

COMMISSIONER O'MALIA: Okay.

MR. HAMSCHER: -- between the commodity markets because arbitrage is kind of where it's at.

COMMISSIONER O'MALIA: Yeah, and I'm curious as to what our 21st Century surveillance system may look like in light of the arbitrage opportunities and the different regulatory structures.

So after Walter was Larry Tabb, Steve and then Richard Gorelick, Brad Levy, Nick Solinger, Jason Vogt.

MR. TABB: I don't have a real comment on the discussion. I just wanted to basically say I think, you know, the CFTC and SEC have historically kind of looked at this separately and then kind of diverged -- I don't know -- maybe 15 or so years ago, maybe a little longer.

But the whole idea of two major routes -- one is around order flow segmentation and the SEC's view of kind of looking after the individual investor and this whole idea of, you know, we need to do good by the individual investor. And the second, I think, is around competition and fragmentation of the markets.

So, with the idea of we need to give the individual investor a better price or a truer market, they went through this whole idea of starting to segment order flow. And I think a whole lot of things transpired from there. When we started segmenting order flow, we can provide price improvement to different classes of investors. Then you start looking at toxic versus nontoxic order flow, and then we can start avoiding the toxic order flow and kind of focusing on the uninformed order flow.

And then the issue of are centralized markets -- you know, do they have too much power?

And then we start breaking them apart, and then you wind up with this kind of view that, you know, we need to try to segment and understand and certain -- you know, monetize or understand the financial impact of a stream of order flow. And that goes into RLPs and now this whole idea of institutional liquidity programs.

And you wind up with finer and finer grained liquidity which, to some extent, in some cases, if you're a retailed uninformed investor, is good. But if you're trying to get stuff done and you're an institution, it may not be good.

And you wind up with all these discrete liquidity tools that then you wind up either having to glue together or not glue together, and you wind up with this fragmentation challenge.

So, if you want to keep the holistic market, if you want to keep better surveillance, you want to try to understand exactly what's operating at every given -- I would try not to go down that path.

On the other hand, that path has provided a lot of benefits in terms of competition and cheap executions, but it creates other problems as well.

So that's, I think, the --

COMMISSIONER O'MALIA: Make sure you stick around for Panel III on SEF regulation.

Next, Steve with FINRA.

MR. JOACHIM: Thank you. I'm not going to get into the equity fragmentation debate, but certainly equity fragmentation creates some unique challenges for the regulatory side of the business. And we have made some great in-roads, as Chris referred to the work that FINRA has been able to do to consolidate some of the regulatory activity across markets, and today we can actually see across-market participation and strategies across those environments.

But there are a number of differences in the equity marketplace, and I'm curious to see whether they are problems for the futures marketplace.

When we think of market integrity, most investors come to market today, working not just across execution venues, but they work across broker-dealers, and they've done that for many, many years.

As a result, understanding from a regulatory perspective what bad actors are doing or bad practices are, you need to reach beyond what's happening at the exchanges and into what the customers are actually thinking about and what their strategies look like. Those strategies, when they cut across multiple broker-dealers, as well as multiple exchanges, creates a level or complexity that is difficult to get your arms around.

CAT will bring us much, much further down the path. It may not be perfect, but there are many, many advances in CAT that will allow us to see things across investors in a way that we can't see today by bringing orders and executions reports and trade reports back to the ultimate investor and allow us to root out abusive strategies.

I'm curious to hear, what's happening here in the futures marketplace, and are you thinking that way?

Do you see behaviors in the futures marketplace where investors reach across multiple dealers because I assume the points of execution that the exchanges are talking about, that they can see, are the dealer activities?

And what about reaching beyond the dealers, and are there activities being done to reach beyond that effort in the futures marketplace?

And we get to the issues you talked about before in terms of cross-product behaviors.

We can call them many different ways that are futures and equities and options and bonds. When we start thinking about regulation in those worlds, it's even more critical that we think about what customers are doing.

So I'm just curious to hear what the futures marketplace is thinking about in terms of what they're doing there.

MR. DURKIN: I'm not trying to dodge this question, Steve, but I think if we could hold that one for the next panel Andrew will be speaking to the issue.

MR. GORELICK: Thank you. I'm Richard Gorelick, CEO of RGM Advisors, a principal trading firm based in Austin, Texas. I appreciate the opportunity to participate in this dialogue as a member of the Technology Advisory Committee.

I do want to comment that I've been on this Committee since Commissioner O'Malia reconstituted it in 2010, and we've heard a little bit of this already today.

And I will admit to some surprise that

in 2014 we're still talking about some of the very issues we talked about at the first meeting and the second meeting and the third meeting.

The Commission and this Committee have certainly contributed to improving understanding by the public and by policymakers of the use of technology in markets.

I'll limit my comments at this point to Vince's question a little bit earlier about where is there an appropriate area for the Commission to engage in some of these areas. And, while I agree with a number of the comments made today about principles-based rules on risk controls, it may be an appropriate place in the market for these rules to come and help make sure that there really are consistent risk controls across exchanges and across market participants.

I also want to limit my comments at this point to the fairness topic that this discussion today relates to in this panel. And, on fairness, I believe it is paramount that market facilities, such as co-location and market data feeds, are offered to the public on fair, reasonable and nondiscriminatory terms. I believe that to be the current practice, but I also believe that there is an important role for the Commission to monitor and assure the public that this is always the case.

In addition, transparency is essential. Recent press reports -- and we've talked about it a little bit today -- have indicated that the Commission is interested in the terms of market-making and liquidity provision programs offered by exchanges.

In my mind, the conditions and terms of these programs should be transparently disclosed to the Commission and to the public, and there should be no secret pricing deals. To the extent that that is not the case today, reforms may be appropriate.

I will reserve some of my thinking on the surveillance issue for the later panel as well.

Thank you.

MR. LEVY: Thank you very much. I want to continue on a little bit with what Larry was hitting on, which is the point on competition, and it seems like the debate today is about competition, which was part of the SEC's intent. You know, maybe they went a bit too far in succeeding on fragmenting the market by Regulations ATS, NMS, et cetera, but that was their intent, and you know, they should be applauded on some level for achieving that albeit it, arguably, had gone too far.

At the other book end, there is an argument that simplicity is better from a regulatory perspective and a market surveillance and safety perspective, which there are definitely arguments, I think, that support that.

The reality is in life, and probably in this debate as well, the answer is probably somewhere in the middle, where hyper-fragmentation creates many negative unintended consequences and, on the other end of the spectrum, very limited alternatives creates other negative unintended consequences.

So I'll just make that point. And the SEC, as a commission, did take a view on that. I think there are elements of what the CFTC has done in the implementation of Dodd-Frank that lean toward that, but there maybe could be a bit more work done around the preferred outcome from a regulatory perspective of where the right balance is between simplicity of market structure and competition.

The other thing I'll draw just a point on, which hasn't been discussed today, is the difference between execution and clearing. A lot of this discussion today on equities -- hyper-fragmented at the execution level and zero at the settlement and clearing -- and that is just at least something to think about when we think about the structure of derivatives/futures versus the equities markets and the pending markets in the swaps world. And we've heard about some potential competition from that angle, but it's not clear that that's going to really push the market to a higher standard.

And the final point I'll make is that, ultimately, this is all about transparency and not the typical type of transparency I think that people think about, which is data transparency -- market limit order books, access to information. It's really about transparency of the market structure.

There have been a couple of things that have come out recently. I think Goldman and Credit Suisse recently disclosed the workings of their dark pool, which was always considered very proprietary, and that is definitely a step in the right direction in terms of transparency. That hadn't been mandated, but the market seems to be taking it on themselves to do it.

We had a particular initiative in Hong Kong where the regulators demanded that algo firms submit to a questionnaire that says who they are and how they do what they do, and that's a version of what regulators can do to not necessarily prescribe it in detail but prescribe something.

And we just happened to be the firm that was selected to run that process, to get the documentation and the whole system up and running by the end of the year last year.

And then there are other tools, like TCA, where it's really tools that allow market participants not to rely on what people tell them but to actually know for themselves how their transactions are being handled in the market, whether they're moving markets, et cetera. And those are all tools that the technology firms like ourselves and others will provide to the markets.

So there are some self-imposed, there are some that will be imposed by the regulators, and there are some that the market will just fill in. But, ultimately, around all of that, the understanding of how competition should really fall out in the markets in general is just an important concept for the room in general and for the Commission in particular.

MR. SRINIVASAN: A lot of discussion here has been about market structure issues, and we economists spend a lot of time thinking about it.

But thinking about operational risk issues, the concept release that we issued and sort of received some comments, there are two aspects to it. One is market structure issues; the other is operational risk issues.

And I was just thinking about the comment that Bryan and Chuck made in terms of how you inspect and monitor those with direct market access.

So, when I read about any glitch in the market or stoppage if trading, I'm constantly trying to go to the bottom of the article to see if there's any mention of a software upgrade that happened, and 9 times out of 10 a glitch is typically caused by a software upgrade. You know, Knight Capital is a classic example, I guess.

And the question is, where is industry in terms of the exchanges, the FCMs and others, in terms of how you regulate, how you manage and mitigate operational risk issues?

So, if the exchange has done a major

software upgrade, then you want the firms to come and test the systems.

But what if the customers or the firms have done some changes to the system, at what point do they have to come and test it with the exchange, I guess?

COMMISSIONER O'MALIA: Let's ask Rob that question.

MR. CREAMER: Well, as indicated in the concept release, of all the principal trading firms that were surveyed, 100 percent maintain risk controls that address a lot of the concerns that were brought up today regarding max order size and messages to the exchange. Now that's certainly not the universe of market participants, but it was a quick study going into that process of response, and it was refreshing but not surprising to hear that everyone went down that path. So I think a lot of participants are already going down this path.

We, internally, have produced, as a group, documents regarding best practices which our member firms follow.

The FCMs do hold all of the firms that are attaching to the exchange accountable. There's a vetting and an evaluation of your process and technologies; you go through that.

But there's no doubt we have to be vigilant anytime we're addressing technology and make sure that we're trying to stay on top of everything that we possibly can.

But there are processes that are in place on the customer side. I certainly know that there are processes in place at the exchange level as well.

MR. VICE: Yeah, I think the biggest benefit we have in managing operational risk is that vertical silo.

I mean, if you read about incidents in the equity markets, yes, it's often a software upgrade. It's often some interaction of that software with some third-party software.

I think the fact that we control as much of the end-to-end as possible -- certainly, there are ISVs and front ends and parts that we don't -- HFTs, parts that we don't control. But I think the fact that we have as comprehensive a view as you can, as the exchange operator and the clearinghouse operator, allows us to manage that risk much better than we otherwise could.

I think in terms of just general practices, you know, we're in the process now with acquiring the Liffe exchanges. We have a number of contract migrations going on, moving between clearinghouses and moving between exchanges, even across U.S. and U.K. jurisdictions.

You know, what used to be fairly complicated things we've gotten quite good at. There are extensive industry dress rehearsals that go on, on weekends before these types of things happen. New software upgrades -- software is available in user acceptance environments for weeks, if not months, before it goes live. ISVs and HFTs are very active on their own initiative in testing in those environments. And, as I said, for major versions, we go through conformance again with them as well.

I think our first goal in a software upgrade is to do no harm. Whatever new feature or new logic is going in, we want to make sure that we didn't screw something up by doing that.

So everything that we design is designed to be off, and so we want to make sure that on day one just the software upgrade itself didn't create a problem. And then whether it's a new matching engine, new network, whatever it might be, then migrate to that after we know we've got through the software upgrade.

We make extensive use of beta approach, whether it's moving a smaller market to a new matching engine first or even if we have new market routers, market gateways, in production, even going through a beta phase with various groups of customers that will make sure that that's working properly in production as it should.

So that gives you a little flavor of what we do.

MR. MCGONAGLE: I was thinking back to just earlier this year, that at one of the FIA conferences the exchange presidents were very focused on system safeguards, attacks on the exchanges and the integrated nature of these market participants and their access to the exchange and how we guard against that and thinking about, you know, recent -- or, opportunities where the systems have shut down and we've had to think about alternate trading venues.

And I'm sort of curious as to the exchanges' perspectives. I know it's a little off-topic, but related, about the broader issue of system safeguards as it relates to vicious attacks on our trading environment.

MR. DURKIN: It's an area that is continuously on the presence of our mind and should be. In the context of the level of sophistication of people that are out there, to create cyber-attacks or try to penetrate a system.

I can tell you that from our perspective, you know, we continue to develop and build upon our very robust global information security program. I mean, we have capabilities in place today that, you know, are effectively preventing people from trying to come into our markets.

It happens, and you know, we have effective, I think, protocols to safeguard ourselves in that regard. However, I don't think anyone can ever rest on any laurels in any way, shape or form in terms of the continued development and investment in the protocols to safeguard these markets.

You know, part of it is also very much incumbent on the exchanges and the market providers to have a comprehensive business continuity program. And it's something that we work very -- we strive to test our methodologies and make sure that we're able to provide that continuity and have the redundancies in place, if there is a failure of the system that our backup facilities effectively take over.

And I know that's a little bit separate

and apart from what you were alluding to, but it's all related in the same vein.

MR. SALUZZI: Just, I wanted to circle back -- I'm sorry -- on the fragmentation topic because, obviously, you guys may be dealing with this later when it comes to SEFs. Hopefully, you won't have the same problems we had.

We do have one more proposal which I'd like to throw out today for the SEC or whomever it may be. We're calling it a 3-300. Okay?

So exchanges right now -- market share-wise, there are 5 of them that currently have more than 3 percent market share.

So we would suggest that if you're operating your exchange for a certain period of time -- and I don't know what that may be -- if you can't maintain 3 percent market share, you should lose your exchange protected quote status.

On the flipside, when it comes to dark pools, thanks to the FINRA data, by the way, yesterday that was reported -- we appreciate that -- we're now getting insight on dark pool size.

And it was really interesting that only 17 of them were over 300 shares, average trade size, and about 25 -- I think the count was, if I was correct -- that are under 300 shares.

So we would say that if you can't maintain a dark pool with at least 300 shares, average trade size, you don't deserve to have a dark pool, and at that point you lose your ATS license.

If you were to do those two things, you would drop the fragmentation down to 5 exchanges and 17 dark pools. At least we're getting somewhere. Just a suggestion.

MR. SOLINGER: Thanks. I want to comment briefly on the discussion about risk controls, and I think the exchanges have done a lot of investment in risk controls on their platforms. And the state of the art has advanced considerably in the past five years.

But we still see a lot of headline incidents on issues in many markets. I don't know that many of them have not been in the headlines in futures, but because we're in the markets we're actually aware of numerous incidents involving electronic trading-generated losses in the futures market, in the foreign exchange markets and in other markets that we work in.

Many of those incidents are not captured effectively by on-exchange risk controls, and there are gaps that, as an industry, still should be focused on. A lot of the proprietary trading firms around the table are very effective at managing these because of their depth of experience in these markets. However, as we've discussed, there are far larger numbers of firms beginning to use automated execution capabilities that are less sophisticated and are smaller size, and we see significant risks.

We've had the unfortunate duty to turn off trading on about five firms that were just terminated and a lot of near misses that we've seen. All of them have involved clients being within long-short position limits but having intraday losses that are not well managed on the individual exchange, or they've involved participants who are self-clearing and so aren't employing on-exchange risk controls, or they trade across so many markets that on-exchange risk controls don't accurately reflect their exposure to it.

So it's very common for people to trade treasuries against treasury futures or foreign exchange against currency futures. When you have those correlated trading strategies, those are the places where a single exchange has a very limited ability to capture what's going on, and we've seen -- those are the places where we've often seen the losses incurred where we've had to terminate trading activity for automated traders.

Another point of note, this is not a high-frequency issue. This is an automated trading issue. A number of the incidents that we've seen have been people using commercial, off-the-shelf algos, and they've been directional -- you know, real money, low risk profile types of clients that are relying on commercial tools.

So software has defects and will fail eventually no matter what you do on the weekend upgrade.

MR. VOGT: I have two questions. I hope that's okay. It should be fairly quick here.

One is a clarifying question, I think, for either Bryan or for Julie. I think I heard the answer earlier, but I just want to clarify here.

The common ID or static customer ID, or something similar, that's not shared in any form in market data; is that correct?

Okay. Thanks. And then the second question, can somebody explain -- and probably in simple terms -- why it's believed that co-location eliminates all of the problems, or many of the problems, in the futures market?

MR. DURKIN: I'll start, and Julie can jump on. First of all, I don't know all the problems that you're referring to, but let's just talk about co-location and what it has been designed to do.

Co-location is not in place to cater to a specific segment of market user, and in fact, it's utilized by all segments of users that come into our marketplace.

How do I know that to be the case? Part of it has been the principles with which the co-location facility operates.

And so when we designed our procedures and our policies for becoming a part of, or utilizing, our facilities, we did it with the idea of providing a very open and transparent playing field for people to come in, to be able to have access, if that is an area of interest to them. And it's not an area of interest to all market users.

We work very closely with the CFTC in developing, you know, our principles in terms of accessibility, pricing, contractual terms, to make sure that everybody abides by the same principles and criteria for coming into the facility.

The access to the platform itself was designed in such a fashion that no matter where you're located in the facility your connectivity to the platform is exactly the same. Exactly the same, in terms of the connectivity. So there's no benefits in terms of distance.

In terms of people's general access to the system, we have a multitude of service providers that are inside the co-location facility; we have a multiple of FCMs/intermediaries that are in there. And so they're providing that access to the overall broader client base.

So plenty of times I'm sure that customers don't even realize they're in co-location facilities in terms of their orders and how their orders are being executed.

It takes away a potential inequity by, in the past, having the closest real estate to an operator, an exchange operator, or a data center. Or, in the past, there was a land grab for real estate in and around data centers because people viewed that that might give them greater speed or access to the marketplace.

So, from that perspective, the tenets that I outlined, you know, we feel very strongly has leveled any inequities or playing field with that respect.

Julie?

MR. VICE: Actually, I think it might be useful to kind of contrast our situation in the context of co-location.

I mean, we're in a third-party data center -- ICE is -- both our primary and our DR sites.

We actually added a co-location suite a number of years ago because in this third-party data center it was filling up, and so any of the HFTs that were trading on our markets then had their own suites in the data center. And we became concerned that new market participants would not -- if they wanted to co-locate, they wouldn't have that option.

So we took out a space ourselves, began subleasing to co-lo to HFTs or anyone that wanted to co-locate -- it's not just HFTs -- and it's still a pretty small enterprise. I think we have far more HFTs connecting to us who are not in our co-lo suite than are in our co-lo suite.

So, again, for us, it was meant to just make sure that people could get in there if they wanted to. We don't make a lot of money from it. It's not a big business for us.

And, again, it's not in our exchange cage. It's in a separate cage. I want to make sure that's -- you know, people have this kind of, you know, uninformed illusion that somehow these guys are in the same rack with our matching agents, and it's certainly not the case.

COMMISSIONER O'MALIA: I think certain authors said they were in the exchange.

MR. VICE: Yeah, in the exchange. They're not in the exchange.

COMMISSIONER O'MALIA: There's an issue regarding whether it's spread network or microwave between equity markets and CME, in fact.

The microwave -- that gets dumped into the co-lo facility, or does that go directly into the exchange? So does it get that spooling?

MS. HOLZRICHTER: Yeah, people have obviously several options of how they want to transmit data, and microwave is just -- it's not even the newest anymore because there are even newer technologies out there.

But microwave goes to Aurora, which is the CME data center, and it goes to Sirmac, which is the data center that ICE is located in -- the third-party data center. But what it doesn't do is go into our facility.

So you can beam the information through microwave towers across state lines, but the way that you get into our co-lo facility is through fiber, so the same way everybody else has to get into our co-lo facility.

Once you're in our co-lo facility through fiber, it runs exactly the same way that it would for anybody who's in that facility. And it is spooled.

And the other point I want to make about our co-lo offerings is that we don't allow that to go -- I mean, it goes into our data center, and then it can get to our match engine through a normal fiber feed.

So I think people thought that the microwave went directly to match engines; they don't. They go to -- in our case, they go to a fiber feed that then goes into co-lo that then gets routed through the normal means.

COMMISSIONER O'MALIA: Great. Thank you. Greg?

MR. WOOD: Thank you very much, Commissioner O'Malia.

I'm Greg Wood. I work for the FCM business at Deutsche Bank Securities in New York. I'm also the President of the FIA Market Technology Division, and I was very honored to be invited to be part of the Subcommittee for the CFTC TAC on automated trading and high-frequency trading.

I wanted just to comment on a couple of things, general themes, in the conversation so far today.

Firstly, I have to compliment the CFTC in being so open in these discussions and particularly with the release of the concept release back in September. That was a great opportunity for many of us within the industry to provide feedback on various points that have been touched on today, in particular, around principles around quality management of software development and deployment that apply to all participants, not just principal traders but also FCMs and third-party vendors who provide various tools that allow a multitude of participants now to interact with the futures markets in an automated manner.

And that includes corporates. That includes pension funds, asset managers, et cetera. The automated trading is very well utilized across the futures industry now by all participants.

Also, the concept release, yeah, touched on risk management, and it's worth highlighting that I've sat at this table previously with regards to CFTC Regulation 1.73 that actually mandates that FCMs have to put risk management controls in place.

Now those risk management controls consider various levels, and we do utilize exchange controls. As Bryan says, they're mandatory. But we would use them definitely for participants. And, again, there's a variety of participants that would access the market directly.

And we rely on exchange controls to provide that level of risk management but also then feed back into the holistic risk management controls that we have at the FCM.

One of the other points that was brought up in the concept release that goes back to our very first involvement with this Committee was the definition of high-frequency trading, and we came up with a definition that was very mechanical in the way that we talked about various aspects of high-frequency trading because most of us within the group, with some obvious dissensions, felt that high-frequency trading is a tool and is not necessarily a categorization of a type of participant.

And I think it's -- we've had some criticism over that definition, but I think it's good now that we put that out there because it doesn't mean that there is a type of participant that is labeled as high-frequency trading that is a performing a certain type of activity. I think it has helped with the discussion that there are many types of participants who use automated trading, who can interact with the market in various ways.

And one of the things that we wanted to emphasize when we came out with that definition is moving away from trying to look at types of participants and categorizing participants but looking then at types of activities that may be abusive or disruptive.

And it is very good to see the next panel after this one will be based on surveillance because that's where we really felt that the emphasis should be and that surveillance systems should keep up with the speed of the markets and the amount of data that is generated.

Thank you.

MR. MCGONAGLE: So just to touch briefly on the concept release, we've taken in all the comments at the last TAC. Was it the last TAC? I think so -- where we had reopened for receipt of additional comments, and we've taken all those in as well.

We're currently working at the staff levels -- Sebastian and Rachel are back here in the corner -- talking to the other divisions to come up with a recommendation.

So we would bring forth to the Commission an evaluation summary of the comments that we've received and a recommendation about whether or what further steps we should take broadly in the categories of these pre-trade risk controls that we are talking about.

Whether or how there should be some registration component required or suggested, the system safeguards and increased level of reporting obligations -- is that something that we should also take on or require the markets to do?

There were certainly a lot of comments about using principles versus prescriptive.

And recently, I was called to testify before the Senate to sort of talk about those differences.

But we are getting closer, at least internally at the staff level, on a recommendation that we'd like to discuss with the Commission.

MR. CONCANNON: Yeah, real quick -- well, first, for the record, I just realized no one wants to sit next to me, and I think it might be my HFT label on my panel.

Just on risk controls, again, there was some discussion around system changes, and I think that's a critical topic because obviously the evidence does reflect that many of the problems that we've had in our market do involve some system change or system enhancement.

The PTG group did put out a fantastic paper on best practices. That's something that everyone should take a look at.

But I think in topics of risk controls, if you're properly writing rules around risk controls and pre-trade controls, it should be built to assume those breaks because software isn't the only thing that breaks. Hardware breaks as well, and you can't predict what happens when hardware breaks. So risk controls are designed to capture not only bad software, bad algos, bad behaviors, but they're also designed to capture system outage or system issues that create that kind of activity.

So, when you design risk controls, you should have in your mind that you're going to have software issues and hardware issues, and that's part of the element of these pre-trade controls that should be considered.

One thought I had in terms of a testing and testing environments is the exchanges do a fantastic job of providing a test environment where participants go in and test, whether they have new code or the exchanges introduce new code.

Something that was introduced, I hate to say, in the equity world -- we could actually learn something from that world -- is the concept of a test contract or a test symbol where the exchanges would introduce a contract that is not a real contract, sits in its production system, and participants can test that contract on a production system because the one flaw in testing in a test environment is just that; it's a test environment.

You still have to reconnect to your production gateways, your production connectivity, and it's not a perfect test, so to speak.

And so there's an additional element where people have introduced testing contracts or testing symbols that are sitting on the production system, protected from hyperactivity around testing, but it does give you a wonderful production test without a real contract or a real market.

COMMISSIONER O'MALIA: I have one more question regarding -- to separate kind of this discussion on maker-taker and some of these fees.

I'd like to get a better sense of how the exchanges, the futures exchanges, deal with either participant fees or rebates.

And I would note that in 2010 there were a total of 56 market-maker and incentive programs filed with the Commission. In 2013, that total had gone to 341 programs. I'm kind of wondering what the factors are that have contributed to this increase and how do exchanges determine whether to implement a market-maker program, for what product, and how do you define a successful market-maker and incentive program, and what might lead to its termination?

So help me understand the thinking of these programs, why we go from 56 to 340, and how do we ensure that they're good developments for the market.

MR. DURKIN: First of all, Commissioner, I'm not, you know, totally sure in terms of the numbers that you just outlined, okay, but I can say this; I mean, in the context of filing, I know that those are not all new programs. They're modifications that were made to existing programs.

And I'm imagining the same holds true for ICE. So there are new programs and modifications to existing programs. As to my earlier comments, just to reiterate, let's just level-set there's a distinctive difference between what we've heard in the equity markets and what occurs in the futures market. I just need to reiterate that.

However, in the context of how we decide to employ programs, it is really in the context of developing markets and building liquidity in markets. So there's maybe a need in the context, or there is a need, when we're developing a new product and bringing in a new product into the marketplace.

It is not a stock. It doesn't exist somewhere else.

It's conceived through the intellect and the development of our research people meeting a risk management need that we find in the marketplace. Going to market with that is very part and parcel to working with the trading community, ensuring that we have a product to go to market with and have capabilities to build markets for other market participants to come to a centralized pool of liquidity, to be able to trade.

And so in building up that liquidity, we have found it very effective to have programs in place in which we have market-makers as a portion of that, to be there and provide markets throughout the trading session, continuously providing bids and offers, and have a responsibility to abide by criteria that we set out in the context of depth of market, the size of the bid-offer, the spread, and giving them incentives in the context of reduction in fees, volume, incentives to build up a marketplace once that essential base of liquidity has been developed, continuing to build upon that and have that continuity of, again, deep liquid markets for participants to be able to come and rely on around the clock.

You know, we look at these programs continuously. You, obviously, see that we make changes to programs and we file those programs to the CFTC. CFTC will have questions from time to time. We respond to those questions. And then we go forth in adopting the programs.

The programs themselves have very specific criteria in order to be able to be a participant. That criteria on the programs themselves are not only filed with the Commission, but they're also posted on our web site.

When we look at programs and participants, we certainly look at it in a context of:

Is it achieving the end result and the goal of building up liquid and vibrant markets?

You know, are the criteria themselves well defined? Yes.

You know, do people have the opportunity to participate in these? Can they look at a venue in terms of our web site, in terms of what might be available there and what product base and for what purpose? Yes.

And then as we go along we certainly monitor the efficacy of the programs, and at times we eliminate them. Or, if parties to the arrangements are not fulfilling their obligations, yes, then we remove them from the programs.

MR. VICE: Yeah, I was just going to say -- and I think somebody alluded to it earlier -- we're both for-profit companies. So I can assure you neither ICE nor CME have any program or any fee discount that it doesn't think is absolutely necessary to either build or maintain a market.

And like Bryan said, we're constantly reviewing these and reviewing the participants in these programs:

Are they meeting the obligations? Should they be removed from the program? Should the program itself be moved or changed? I didn't catch the timeframe of your two comparisons, we did -- as you recall, ICE had a large over-the-counter swaps market that became futures. There may have been a slug of incentive programs that came across with that. I don't know.

But I think in addition to things like starting a new market, building the options in a market, focusing on the front three months, focusing on the back months -- you know, there's a healthy amount of trying to compete with a comparable CME product, which I think is good for the marketplace.

As CME, we have to file each of these programs with the CFTC. They're on your web site.

They have start dates and end dates. At the end date, we may renew it. We may discontinue it. We may change it.

And the profit motive keeps us very interested and on top of those programs so that we're not paying someone to do something that either they're not doing it or it's just not effective.

COMMISSIONER O'MALIA: All right. We've reached the end of Panel I discussion. Are there any final words or comments anybody would like to make? Anybody on the telephone?

(No response.)

COMMISSIONER O'MALIA: All right. With that, we'll take a break.

What time are we coming back? 1:30. All the TAC, all the people seated at the table and our witnesses are invited to join us for lunch upstairs on the 9th floor. We'll have staff take you up there.

Thank you.

(Whereupon, at 12:22 p.m., a luncheon recess was taken.)

A F T E R N O O N S E S S I O N

(1:34 p.m.)

COMMISSIONER O'MALIA: Okay, this is Panel II: Developing a 21st Century Surveillance Program.

Now we've asked Jorge Herrada, the Associate Director of our Office of Data and Technology, who works with John, the Chief of our Office of Data and Technology, to put together a first-of-a-kind analysis of the Commission's data.

I have never seen a document that looks like this. And we just kind of intended to pull together everything we're looking at and to size it kind of appropriately and to really focus on some of the resources that are used to support this, and we'll look at some of our enforcement data, look at some of our new market data.

And this, I think, just an opportunity to provide everybody some perspective on kind of what we're dealing with and really the opportunities that we have with the data.

And I want people who have dealt with

this type of data before, and these are certainly the exchange leaders that have these responsibilities. We've got Trabue and others to contribute to this.

So Jorge is going to set us off, kind of showing what's possible or kind of what we have today. And then, obviously, I want to think about what is optimal.

This is not to defend the current practice. This is not to be constrained by the current practice. This is really intended to be an opportunity with a fresh sheet of paper to design that 21st Century surveillance system and think about the key tools that the Commission should have in place.

I was encouraged by the first panel that said it's interesting what we're talking about today, but let's talk about the next panel and how we are really going to enforce it.

A couple points were made that you're going to have technology in the markets. It's not something -- a genie you can't put back in the bottle. And so we're going to need to deal with it. And, in dealing with it, how do we establish that surveillance program?

So let me turn it over to Jorge. He'll be followed by Andrew Vrabel with CME. And then we'll go to Steve Joachim over here with FINRA to have FINRA help us think about some of the innovative ideas that they have cooking in the equities markets because, clearly, we can't stop talking about equities today.

Anybody at the SEC, don't tell the Chairman, will you? It was all about futures today.

He will be followed by Rob Creamer, obviously, to provide his input with the PTG and proprietary traders about what they think would be an optimal 21st Century.

And then Dave Lauer will contribute his ideas as a former trader and his thoughts.

And we'll wrap it up with Trabue Bland with ICE to provide some closing comments.

So we'll book-end the exchanges and add

some other color in between.

So, Jorge, it's all yours.

MR. HERRADA: All right. Thank you, Commissioner O'Malia.

So this is the part about data, and I have to tell you I'm a little anxious about this presentation. The challenge is we've just all had lunch. You know, everybody is kind of settling in. And I don't know if there's anything less interesting than data, but we're going to try our best to make it at least somewhat interesting.

COMMISSIONER O'MALIA: We could spend the entire day talking about equity market structure. (Laughter.)

MR. HERRADA: There you go. My hope is that at least most of you will stay awake during this. I will consider it a victory if that's where we end up.

So, ultimately, what I want to do is talk about the data at CFTC.

We'll talk a little bit about the daily data volumes. I am a bit nervous about that particular slide.

I spent a lot of time putting together a slide on volumes because ordinarily I would do this presentation internally and no one would check my numbers all that closely. But since I'm right next to Trabue he'll probably kick me and go: What? That number doesn't sound right. We send you way more than that on a daily basis.

MR. BLAND: Let's call it equal so you don't kick me on my part of the presentation and I won't kick you on your part.

MR. HERRADA: Perfect. All right, we've got a truce going on here.

But, no, actually, we shouldn't that or we'll get ourselves in some trouble for collusion.

Anyways, the idea here is we'll talk about daily data volumes. Hopefully, we're close.

Nine categories of data. So what we try to do is take the data that we have and say, could we categorize it? And there are many ways you could categorize the data, but we came up with these nine categories of data.

Then we'll talk about some details of the data categories as we break down those nine categories into further detail, some information about the data-loading challenges that we have, some trends in data volume, and then, ultimately, we'll finish up with one slide on SDR data harmonization just to get you up to date with what's happening there.

Okay. So this is my big slide. You know, this is really difficult because what I wanted to do was try to find a way to show all the data that we have at CFTC in one diagram, and that's not particularly easy to do.

And then I put the ambitious thing that I was going to try to come up with a scaling mechanism of 2.5 million records per inch.

And then we ran into a little problem, right. Time and sales threw it off, right. Two hundred and forty million records are coming in. It's sort of the top of the order book. Every time a record -- there's a change at the top of the order book, we have the best bid and the best ask. So there are two records there.

So it's not to full scale because the time and sales data would be eight feet across.

Now I was thinking that it would be kind of -- to try to keep you guys awake after lunch, it would be interesting if we rolled in an eight-foot wide ball right there.

That's true; it probably is to scale on that screen. There you go, right.

So, if we had an eight-foot sized ball, that would be to scale because at 2.5 million records per inch.

So that's one piece of the data that we have. Another big one -- and, by the way, I will confess; anybody that I've shown this to internally has said, well, you're comparing apples to oranges.

And I will say the enforcement data is a little apples to oranges because everything is an approximate number of the millions of records per day that we're loading at CFTC, but the enforcement data doesn't really come in as records; it's unstructured data. It's audio tapes. It's e-mail records. It's a whole bunch of things that get subpoenaed.

There is some structured data in there. So I chose to use a 0.2:1 terabytes of data a week that we're ingesting, and again, that would be about 10 feet.

And the reason I did that is I said, well, what you'll see later is the amount of enforcement data we have on disc is roughly equal to the amount of data we have in the structured data side. So they're about equal.

So I made that one about a 10-foot wide ball. Compared to all the other things combined together, it's about similar.

We have futures and swaps position data -- you know, roughly about 2 million futures coming in a day, about 14 million on the swaps. But remember -- and we'll get to it shortly -- that we're not ingesting all the swaps data; we're only ingesting a subset.

So this is the swaps data that we pull

in. We have Steve Reich here from FERC. So, Steve, this is for you. We have the FERC data. We're sending data to FERC. This is part of our MOU that was signed in January, and we're sending over about a third of a million records a day. And so it's position data, market data, that sort of thing that helps them with the natural gas and particularly the electricity markets, to use that data to allow FERC to have a better view of the entire market as a whole.

So we have that information there. And then, on this other end here, another big piece of data is our futures intraday trade data. So, again, that's CME, ICE and the other exchanges. It's all your intraday trades, and that comes out to about 10 million records a day.

And we talked about -- and I think, Commissioner O'Malia, we'll get there when we're going to discuss -- the idea if we were to ingest the message data, right. If we pull that message data in, what would that be like?

And we've done some approximations.

We've made some calls. We've looked around. We've looked at sample data. And we're looking at that being two, three, four hundred million records a day.

Of course, obviously, that would take that bubble and -- phew! You know, blow it up pretty significantly.

So that is -- again, that was our position data. That's our intraday trade data. We've got our enforcement stuff.

Now we'll get into some more of the details. Market data. Again, it seems small, but it is there. It's 0.2 million records a day of market data, and we have a lot of stuff.

These three bubbles here -- margin and collateral evaluation stress test and financial statement capitalization -- these are all part of our risk surveillance program, and that program has really grown significantly over the last two years. And so we're getting more and more sophisticated ways to measure and do risk surveillance of the market.

So that's all that information coming in toward there.

And then, finally, we have organization product data. You know, that's your Form 40s, your Form 102, any information we have on organizations -- LEI information, that sort of thing.

And then, of course, this is completely not to scale, for our SDRs here. I know we have Marisol here and others. So we have -- this is -- I've made this more like a cloud because, basically, it's a reference to these data that are off-site that we're tapping into now and looking at for the swaps data repository.

All right. So that's that' slide. We'll go into a little bit more detail. Again, this is just the nine categories. I won't go through them, but it's the same that we saw before -- intraday trades, time and sales, position data, market data, margin and collateral evaluation stress test, financial statement capitalization org and product data and enforcement data.

So the idea here -- I put this slide in here, and, again, you all have the handouts. This is, I believe, going to be available electronically. And it will give you some details as to what we were including in those nine categories.

And, again, I would say that three of those categories are very risk-oriented -- the margin and collateral data evaluation stress test and financial statement capitalization.

So a natural question would always be, all right, so we've got these data, but how does -- you know, what fits in those categories?

Again, I won't go and bore you with all the details, but I wanted to put this slide in here so that you could see. And this is color-coded back to my bubble diagram. So it's using the same colors there as here, and so you can start to see all the different pieces that come in, for example, between the swaps and the futures side.

So, for example, when you look at the

event data, we're pulling in some event data, Part 45 data from DDR at this point, but that's DDR sending us an FTP of that data, and so that data we are ingesting.

These little funny arrows here indicate that we're streaming data. We're going out to get that data from, say, SDR portals or getting data from market or from ICE-cleared credit margin API, NFA daily seg. funds, that sort of thing. So there are references to data that we're not necessarily storing at CFTC, but we're referencing that data outside.

And then this funny little symbol here is toward the idea of data that we export out. So FERC is the only place that we export data out on a regular basis, and we're sending out that FERC, large trader and market export data.

But, otherwise, this just shows you where we're getting the data, and it shows you the various sources for that information, whether it be Reuters, FutureSource, Bloomberg, Markit or large trader data, Part 17, Part 16, Part 20, all that sort of thing.

So, anyways, that's a slide for you to look at, at a future date, but it gives you an idea of where we're getting our basis for our information.

We tried to -- this is my attempt at trying to draw out some discs. You know, in the old days, it was floppy disks. There's no good image of a hard drive. So, anyways, this is my attempt to try and lay out where we're using our storage.

And what we find here is that we break our storage and our servers into four main categories -- enterprise, infrastructure.

All the firms, you have servers and data storage for your e-mail and for your voice mail and for your intrusion detection software and all that kind of thing. So you've got lots of that sort of thing.

Ultimately, though, when it comes to storage, the vast majority of what we store is for the eLaw program and for our structured market data.

So, again, this is the production side of our data, and we're looking at -- you know, this is in terabytes. It's not huge, but it's significant enough that there is some serious crunching going on -- you know, 160 terabytes, roughly. About 39 percent of all the data stored is enforcement related; 38 percent is structured.

Again, that structured stuff is very compact. So you've got to understand that is a ton of records.

If you were going to match the amount of storage that eLaw -- because if you think about what a voice record is, a voice record takes up a huge amount of space or any sort of data, like that video voice. And so when your structured data matches that, that's representing a heck of a lot of structured data that we have on disc.

But we move on to the idea of servers. So this is my stack of servers here.

And this number seems a little low, but I'll talk you through it a little bit. In fact, I'll refer to one of my notes here so I can speak to it more clearly.

So what we have here is the servers by these different four categories.

Now, if you think about your own enterprise, you do need lots of servers that are very specific, right -- an intrusion detection system, a BlackBerry server, you know, a voice mail server, an e-mail server, and all those kinds of things.

So each one of those -- it's not surprising that we have 120, 130 of those servers.

This, by the way, is production servers. It is very important to know the distinction because when I looked at these number I thought, well, they seem low. You know, people here running major exchanges will say, well, that's a very small number of servers.

But this is our production servers that we're running. So you could triple this because you put in your test and development servers, and you get those numbers.

But eLaw tends to have more, and then we have our structured data.

So the structured data, by the way, are things for our data ingestion applications, our SAS servers, our large trader servers, our trade servers, all those kinds of buckets of data we're looking at of that type.

Enterprise applications are more your generic servers, like time sheets and basic things like that. You know, your enterprise management of documents.

All of Commissioner O'Malia's speeches, I think that represents -- I think going back to this slide, I should have showed that taking a third of the available disc storage space, but there you go. There is a clear legacy that Commissioner O'Malia is going to leave us here.

So there we go. Now that is the servers. So I wanted to answer the question, when you look at this and you see eLaw and you go, well, why so many servers?

This is our little diagram of servers.

And we sort of sized these based on, well, maybe their significance, but there are things here.

We originally laid out where it showed the brand -- you know, the actual software that we use. But then we thought, well, let's just make it more generic.

So the types of software we're using here -- FOIA tracking, eDiscovery, digital forensics, legacy eDiscovery, eDiscovery Review, audio search, trial presentation and so on. So it's a very full-blown set of applications.

The key thing to keep in mind, though, when we're talking about data-loading, which is the next couple slides, is to understand that this is a highly standardized data, business functions and software product. This is an assembly line that's been set up.

And if you think about it, it's pretty -- again, no offense to the eLaw people that are here, but it is a standardized approach that we go through from an IT perspective.

Obviously, from a lawyer's perspective,

every one of those cases is going to be quite different.

But from an IT perspective, we have these applications. The assembly line is set up. When we go to do a subpoena and we ask for more information, it goes into the machine. The machine is set up to take that sort of data.

But this explains why so many servers is because we have so many applications on the eLaw or the enforcement side.

So here's a little about our eLaw staffing and data trends, and then we're going to talk about our structured data trends.

This shows you at the bottom the number of FTEs and then the number of contractors. It's been fairly steady over the last couple years, from 2009 through 2013. But what you see is the amount of gigabytes processed per month continues to grow. So, as time goes, we're continuing to keep pace.

It doesn't mean that we don't need more resources. I want to be clear that this is not a "oh, we're happy with our resources" or anything like that.

You know, if somebody asked me the question, does CFTC need further resources, I will give a resounding yes, we certainly could use more resources.

But this shows, again, the ramping up of our staffing rests relatively flat, but the amount of data we're ingesting continues to grow significantly.

So, on the other side of it -- and I'll try to run through this one a little slower because there's a punch point here -- is this is a status of our structured data-loading at CFTC.

So what we have is a continually increasing scope and complexity of the structured data files. Again, this is the non-eLaw stuff.

In 2013, we added 65 new types of data. Prior to 2013, we only had 51 in total. So what has happened is that since 2010 to 2014 we've had a huge jump from 20-some to over 120-some different types of loaders.

And we were trying to -- when John Rogers and I were talking about this, we were trying to come up with a metaphor. It's not a perfect metaphor, but it hopefully will help you guys to understand.

And I'm sure you feel the same way, any of you that are subject to our regulations, that to try to produce this data is also as challenging as it is for us to ingest it.

Obviously, there's lots of stuff there. So each new data set requires data standardization, data architecture, custom loaders, data quality checks, monitoring feedback. You know, it's all sorts of working with you guys to come up with those standards.

We try to adopt standards like FIXML and FpML, but unlike eLaw, each new data set is a major project unto itself. It's analogous to standing up a new factory production line.

So we have the eLaw factory production line operational, but now we need to put in this other type of production line every time we --

part 45 or Part 39. Anytime we put new parts online, we have to do a major ramp-up to do that.

And data standardization and harmonization is critical. Again, I know that -- I almost feel like I'm preaching to the choir on this one because I know that you guys on your end have to -- you know, Marisol is giving me that knowing look. Yes, exactly, the challenge also is that you have to meet that standard as well.

So we're there to receive it, but you have to produce it, and we recognize that there are some challenges to meeting it.

But, again, here's a case where we've really been resource-constrained. The number of resources on this end has been dropping. Ed Wehner, who's sitting in the back there, is doing a great job of managing this particular group but with the limited resources.

And this is one of those "it takes a village" sort of thing because it's not just the data ingest team, but it's throughout. The entire Commission has to get involved when we stand up a new data standard.

So that is one of the challenges that we face, but I think, again, Ed is doing a great job of rising to that challenge.

So this is kind of Ed's world here, right? I should have labeled this "Ed's World" instead of "Challenges."

Ed is running a 24-hour shop here, and this shows the times that the data comes in and the processing. Right here in the middle is 8:00 to 5:00, when the CFTC analysts are looking at the data, but the data is coming in all throughout the day. And certain things take hours to load; some things take minutes to load, whatever it is.

But this is his day, monitoring all this stuff, making sure it all works. And so this is just part of the setup for the day. It's a challenge to keep it all running, but again, Ed is doing a great job doing that.

So, anyways, that is the last slide on data and what we're doing with that, just to give you a flavor of the type of data we have and all the pieces.

And then -- oh, did you want to ask a question?

MR. BLAND: Yeah.

MR. HERRADA: Yes, please.

MR. BLAND: I was going to ask a quick question.

MR. HERRADA: Sure.

MR. BLAND: I mean because this informs the rest of what we're going to be talking about.

How do you -- I mean, when you bring in the data, I mean, does market surveillance have access to all of these bubbles in the first slide?

I mean, is there anyone who looks across all these pools of data?

MR. HERRADA: Right. So does market surveillance have access to all this data? Yes.

I mean it's market surveillance or risk surveillance. Each one, of course, has their own focus area, but the data is available.

Now I think what Commissioner O'Malia will sort of get to is how are we integrating this? How are we looking across all that data? That's really the $64,000 question.

But, yes, absolutely, this data. All this data that we're loading. None of the data we are loading for our own -- you know, just for fun. You know.

But, no, any data we get we're loading, and it's all becoming available.

But, yeah, I think that the challenge we always have is the integration of that data, particularly -- and I think the LEI is a huge step toward that because now, with the LEI, we can try to see positions across all these different asset classes.

But we still have a while to go. We have the OCR rule that's helping toward that, but the challenge is taking these data sets and trying to merge them together in a meaningful way.

All right. Well, let me hit the last slide, and then we'll let the other panelists have their chance to speak.

Harmonization update. Again, this is

just a quick one-pager just to say the phase one harmonization is in process at the SDRs, and our focus is on the credit asset class. Phase two, again, with a credit focus, is in the final stages of ODT review.

We've scheduled -- we do these bilateral meetings. So we get to meet CME and DDR and all the other SDRs.

So we have these meetings. We're working on harmonization.

Actually, I should say that somebody said, well, make sure you tell -- I mean, I assume everybody knows what harmonization is all about, but one of the people I was doing this for this morning said, make sure you slow yourself down and tell them what harmonization is.

Okay. So the point is, just so we're all there, the idea of this is harmonizing SDR data. And the challenge we have is unless the data are harmonized, if we have data coming to us from different data sets and we can't take those data sets and be able to trace, say, a swap as it moves from one SDR to another, or if we can't have things using the same standard language, if we can't agree to what a report date is, if we can't agree to -- we were talking about this today at lunch -- what an execution timestamp is.

You know, is an execution timestamp the time that the trade is executed, or is it at the time -- or do you keep -- but when there's a change, innovation, modification, do you keep the same execution timestamp from the beginning date or do you let that execution timestamp be every time there's a change to the actual swap?

So what happens is there are so many inconsistencies -- not inconsistencies, but different ways you can interpret the most basic field. That's what gets me when I think about harmonization.

I look at these things and I say, it can only -- you know, this is so obvious. I don't know what the big deal is.

But then when you talk to the SDRs and you talk to people that use this data, you realize, oh, my gosh, quite legitimately, there are five different definitions for the most obvious field.

And so this is the challenge with harmonization. But the harmonization benefit really is to benefit the industry as a whole and also to benefit CFTC with the ability for us to aggregate the data, to look across all the data all at once, again, toward that idea of the LEIs and other things, to be able to see a portfolio across a range of SDRs.

So that is, again, a little background on harmonization.

So we do have these bilateral meetings. We are doing independent data quality analyses. Some of you may have seen some of that if you've been in our meetings -- in those bilateral meetings.

Discuss -- so we're doing exception reporting with the SDRs, talking about them, about exception reporting from the SDRs to the data submitters themselves.

We've got meetings -- we're working on planning a joint meeting with the SDRs this summer about phase two harmonization.

And we are -- there's not anybody here from OFR, I hope, because I misspelled OFR.

So I notice that is the worst thing about quality checks. Clearly, even CFTC has some data quality issues, and this would be one of mine.

So, anyways, somebody said I should refer to it. We were using the French name when I put the OFR down there, but anyways, it is OFR, not ORF.

So we are having a joint effort with OFR. They've been very helpful, and they're assisting with the harmonizing of the IRS asset classes. OFR is going to be working with Sayee and others within the Office of Chief Economist with some IRS research, and the IRS research includes swaps and futures data.

So, anyways, that is the update on my

end, and I will turn it over to others, and then we can take questions.

But, hopefully -- my goal for all this stuff really, if anything, is probably this slide here. And it's just to say -- to try to give you a sense of our data landscape when we look at what we have because we're going to talk in this presentation about what does the surveillance system of the 21st Century look like, and so this gives you a sense of the levers.

This are the data that we have to play with, and so we can talk about playing within this data set. And I think it's a pretty broad data set. Yes, there are some things that are missing. I certainly -- you know, the SDR data are in its infancy, let's say. And then there is, obviously, a lot of message data that we could incorporate.

But I think that we've got the raw materials for a great surveillance program, but there is still, obviously, lots of work to do.

COMMISSIONER O'MALIA: Great. Thank you very much, Jorge.

Maybe some of our SDR friends could reflect -- where are you going, Jorge?

MR. HERRADA: Oh, I was going to slide over there so that the next person can speak, but I'll stay. I like the buffer between me and the rest of the panel.

COMMISSIONER O'MALIA: Maybe, Marisol, you can give some thought to what we need to think about in terms of how we size that cloud at some point, but while you think about that we're going to move on to Andrew's presentation from CME, to give us some context about how we can work with CME to expand our surveillance capabilities.

MR. VRABEL: Thank you, Commissioner O'Malia and members of TAC, for inviting CME on this panel.

I do think that there are some missing levers in terms of what Jorge just presented in what it takes to have a 21st Century surveillance system.

COMMISSIONER O'MALIA: Can you just pull that a little closer -- that microphone?

MR. VRABEL: Of course. So from our perspective as front-line regulators, the CME Group Market Regulation Department investigators and analysts, have at their disposal a suite of highly sophisticated tools that they use to monitor and survey and preserve the integrity of CME Group's markets, and we have a level of proficiency with regard to identifying and investigating the types of activity that draw a lot of attention these days, namely, disruptive trading practices.

So it's from our experiences there that we can offer these three unsurprising factors that are essential to a 21st Century surveillance system: First, you need experienced investigative staff. Second, you need systems that sit on top of highly granular and enriched messaging and trade information. And, third, you need significant IT support.

I am very proud to lead a large team of investigators and analysts at CME. And, while Jorge may have said that the data isn't all that exciting to the people who are here, I can tell you that my investigators find data very exciting.

It's different than it was in the past, where we were looking at trading infractions that occurred during the course of 15-minute brackets. Our investigators today are looking at fractions upon fractions of seconds.

Our team that primarily investigates messaging practices -- spoofing, flickering, layering, other types of yet-to-be-defined disruptive activity -- are commonly looking at data sets with hundreds of thousands of rows of messaging information in single investigations, performing analyses, restructuring the data in order to identify whether there was any disruptive effect in the marketplace and summarizing that data in a manner that's meaningful to non-investigators and others who have to make decisions based on that data.

The important thing about having experienced investigative staff is that they are integral to the development of technology. Our investigative staff works very closely with our IT department and other technical business systems analysts to refine and make better the regulatory systems that we have at our disposal.

The interesting thing is that our investigators would be fairly ineffective these days if they didn't have that second requirement, and that's having systems that sit on top of highly granular and enriched messaging and trade information.

In 2012, Dean Payton described in fairly granular detail the systems that are employed at CME to monitor automated trading. And I don't want to re-present what we presented in the past, but it's important to recap some of our surveillance systems because it will contribute to the discussions today.

Our investigators have at their fingertips a regulatory tool that we call ARMADA that provides them with order book information -- highly detailed order book information that can be viewed either statically at given points in time or that can be replayed to the investigator, to observe order entry practices and how those order entry practices impact the market.

Our investigators also use a tool called SMART, which is an analytical tool that uses highly enriched cleared trade data, so T+1, which has several functionalities and user interfaces that allow investigators to run predetermined exception reports for identifying activity that hits certain trading practice parameters.

Since 2012, when we last presented on this, the modifications that we've made to SMART include adding 30 percent more data fields that our investigators can look at.

Similarly, our investigators use a tool that's called RAPID, which is an in-memory database of all messaging activity that occurs on Globex. The RAPID tool has capabilities of reading and aggregating over a billion messages per second. This tool is used by our investigative staff particularly with regard to disruptive trading practices where we are literally looking at message-by-message information, hundreds of thousands of rows of data in order to ascertain whether a participant intended to cause disruption in the marketplace.

Through the use of our RAPID tool, investigators are not only able to see messaging activity that comes through single Tag 50s, but they're able to see execution firm IDs, clearing firm IDs, the session through which those orders were generated. As Bryan indicated earlier, they can see whether the order was submitted by a Tag 50 that generally submits orders, automated or through manual means, in addition to several other data fields that are available to our investigative staff.

I mentioned that in SMART we have added over 30 percent more data fields. In RAPID, since 2012, we have increased the number of data fields that our investigators can use by over 60 percent.

The key to those numbers is that in order to have an effective surveillance system today it has to be adaptable to the changing evolution in the marketplace. It has to have input as to what type of information is important for investigative staff and the type of information that's relied on by enforcement staff in taking disciplinary actions.

The third component relates to the having superior technology support. So our RAPID system alone pulls in 250 to 300 million inbound order messages on a daily basis. Again, going back to the prior presentation, the bubble would have to be blown out significantly more if the CFTC intends to collect messaging data not just from CME but from other marketplaces.

I read recently that the SEC's MIDAS system takes in over a billion messages per day, and that represents just a fraction of the overall activity in equities markets.

So the scale of a system to be deployed across multiple markets is going to be enormous, and that enormity of the system needs to have tools on top of it that can effectively and efficiently pull the data so that people can analyze it in an effective way.

The other one final point that I noted before is on having a system that's adaptable to change. It's extremely important from our perspective, from my perspective as a regulator, and that's having the ability to take an idea generated by our investigators and turn that idea into some sort of operational component of our investigative practices. That takes IT support and often a lot of it.

So it's that combination of different things -- having experienced staff, having very sophisticated systems that sit on top of highly enriched and granular data, and finally, having superior IT support. From our perspective, those are the three very basic, and not too surprising, elements that the Commission needs in order to have that 21st Century surveillance system.

Thank you.

COMMISSIONER O'MALIA: Thank you. We're going to go Steve from FINRA.

MR. JOACHIM: Sure. Thank you very

much, Commissioner O'Malia.

I think everybody is speaking from a slightly different angle here, and I think it's going to be an interesting -- this is an interesting panel as a result.

I'm going to take a much more long view in terms of kind of where we're going.

When we start to think about what regulation is all about, at its foundation, regulation is really designed to ensure market integrity and to protect investors.

I'm not a lawyer, and I like to think in simpler terms, and I think about really stopping bad actors and bad practices. At the core, that's really what we're trying to do.

And today we do a pretty good job of that, but there are some real challenges, I think, that we confront every single day as we think about what can be done and what needs to be done in the future.

This morning, we talked about market structure differences and micromarket structure differences. Each product we talked about has unique characteristics and a unique history that got it to where it was, and they have led to many, many different market structure differences. And that presents some pretty interesting regulatory challenges.

There really is, in my view, only one financial market. Most investors and industry participants come to market across products, across markets, and participate in those markets in very different ways.

Frankly, today, our regulatory community does not treat the marketplace on a broad scale in one view, but there are some fundamental similarities to the challenges we all face as regulators.

Rules are largely driven in response to issues that we identify. Unfortunately, a lot of those issues are identified, like looking in the rearview mirror of a car, on the past. They happen, they take place, and we respond to those.

The rule environment and fraud

protection are really driven by the best information that's available. That tends to be samples and partial views, not universal views.

As a result, the process of enforcement of rules and behavior, and the catching and enforcement of behaviors, is long. It requires investigations. It requires looking into many, many, many days and hours of interviewing candidates to piece together all the activities that take place.

The efforts are constrained totally on the regulatory side by cost and cost effectiveness issues. Data is difficult and costly to obtain. I think CFTC has found some of these challenges as they try to harmonize SDR data and some of the difficulties in making it happen.

But it's also been difficult to use as we bring it together. Many of the people that we use in the regulatory community to enforce rules and regulations have limited information at their fingertips as they go and do their investigations.

Regulatory data, in its approach, is

largely segregated by product and sometimes by market. When you think about bad actors, many of them come to the marketplace -- or bad practices -- across products, which means the views are narrow, but the practices are broad.

The great news is that emerging technologies are really changing the game. What is possible today in our regulatory thinking is very different than was possible even three or four, even five, years ago. And, as we start to envision what the future looks like for FINRA in what's called the cash markets, to a large extent, we think that there is a revolution underway that will change the nature of what regulation can be done and how we can interact with, and stop, bad behaviors and bad actors.

We think that the new technologies allow us to much more efficiently collect, store and analyze data. You've read about all of these technologies. We've talked about cloud technology. There are new other kinds of technology that have come to the marketplace that allow us to filter, and we're just on the cusp of what will be possible as we move forward in the future.

We hope to be able to look at the universe of activity from a regulatory perspective rather than samples of data. And, by seeing the universe, we can see broader and much more in depth the activities that are taking place and identify anomalies in the marketplace, integrity issues that we can't see today, and be able to stop them much more quickly.

We can be much more targeted from a risk perspective and observation-focused effort so that we can be much more efficient, not just from a regulatory perspective but from the broker-dealer perspective and all the participants in the markets' perspective, because our questions will be more targeted; we'll be more informed when we walk in the door, and we'll be able to have a much more fulsome conversation about what the issues are and be able to resolve those issues.

Twelve years ago, we launched TRACE, our fixed-income transparency vehicle. We've talked about it here a number of times.

Prior to the launch of TRACE, there really wasn't much transparency in the fixed-income marketplace, and regulators had very little information about what was going on in the fixed-income markets except on a sample basis.

When we talked to industry participants, industry participants predicted a marketplace that was about a third as big as it turned out to be when we had the facts and that had about a quarter of the number of participants that were trading in the marketplace as turned out to be reality.

They predicted that retail customers were not players in the marketplace, and 65 percent of the trades in the corporate buyer marketplace turned out to be retail-size transactions.

The difference between operating with knowledge and operating with extrapolations are very different.

By the way, I don't think anybody in

industry tried to deceive us when we thought about that. I think that each industry and market participant saw the market as they operate in the marketplace and extrapolated that across the marketplace and couldn't see all the facts. It's a much more powerful place from a regulatory perspective, in terms of making policy and understanding dynamic situations, when you can see the universe of activities.

And because of the existence of TRACE, as we talk about some of the important issues that confront the fixed-income markets, like best execution and mark-up issues, those issues we can deal with and analyze with factual information at our fingertips, with historical data, that will allow us to make a much more informed approach as we go forward.

Today, the seeds have been sown for some of the future vision, and I say the seeds because I think we're just beginning a very long process.

The SEC has proposed -- and we talked a little bit about this, this morning -- the consolidated audit trail, or CAT, and FINRA has proposed what we conceive of as a companion project that we call CARDS, to leverage some of these technology capabilities and to provide a universal view of activities in the marketplace, not just from markets but from books and records perspectives. We think this is going to allow us to look across a broad range of products in a way we can't see today.

We know that CAT, for example, will cover all fixed-income as well as equity and options products, ultimately.

But CARDS will also provide access to information that will go beyond the cash and securities-based products. It will give us a view of many other products that are treated by retail customers, in particular, packaged products and other things that we don't see in the marketplace today, that are also potential areas for bad actors and bad behaviors.

Second is that we'll be able to target our regulatory resources where we think they can be most productive. By looking at the universe, we'll be able to identify anomalies in behavior, compare across broker-dealers, compare across markets, and see anomalistic behavior in ways that we just can't see today.

Third is that we think we're going to be able to speed problem identification dramatically because we'll be able to see things quicker, identify problems quickly, and we'll be better informed. We'll be much more nimble in terms of our approach to resolving problems in the marketplace.

And fourth is we'll be much more informed in terms of our policymaking and rulemaking. We'll be able to have much more knowledge when we challenge and see issues. We'll be able to respond with facts and figures that are much more difficult to ascertain today, and much more complex, and this will put us in a much more powerful position than we are today in terms of making sure that we have informed and thoughtful policy and rulemaking activity.

The CAT approach is essentially to collect all orders linked to executions in their various stages and ultimately link that to customer information.

I asked the question earlier this morning about, can we view customer strategies across broker-dealers markets? And, quite frankly, we need to be able to reach in and be able to see which customers and which activities are operating, not just on a market-by-market basis but across products, on venues and broker-dealers in ways that we can identify those behaviors that in one market may look fine, but when you look across multiple venues may look different.

We've had a little snippet of that just as we've consolidated equity regulatory activity across the exchange markets. We call it cross-markets surveillance in FINRA, where we can now look across all of the exchange -- most of the exchange markets, not every single one, but 99 percent of the markets, including them and the over-the-counter marketplace, and see anomalistic behaviors. For the first time, we're starting to capture things and see things that we couldn't see before. It's a much more effective and efficient way to do regulation.

CAT will take that to another level by providing information that will not just link activities across markets but will link it to customers ultimately, so we can see information and cut across fixed-income and equity products from order through execution reports. It will literally change the landscape in terms of what happens on the cash side of the business.

CARDS, which is newer and is a FINRA-based proposal today, not an SEC proposal, will gather information across books and records. The intention is to have a universal view of the essential activities that are happening at a broker-dealer -- being able to look at position data and margin data, being able to look at customer activity levels, being able to look at things like churning of accounts.

On a systematic basis, it will allow us to have much more effective enforcement than we have today, not that we don't do well. I think that there is -- but there is room for improvement here.

To give you an example, we've done some proof of concepts here. We had one broker-dealer who had about a 100,000 accounts, not a ton of accounts from a broker-dealer perspective, but 100,000 accounts. We identified 13 accounts during an examination that we needed to focus on, by looking at the universe of accounts.

Tremendously effective. Tremendously focused discussions.

On a more macro basis, when the Puerto Rican bond issues came up as an issue in terms of risk and vulnerability and who held that, we were able to look across a variety of broker-dealers and very, very quickly and very efficiently identify who held and who had concentrations of Puerto Rican bonds in their portfolios. It allowed us to have much more efficient, targeted conversations with those participants.

Very, very powerful. Much more effective than we could have been and much quicker than we could have been in the past.

So what does the future look like? What could it be?

So we see a world where regulators can analyze areas of greatest yield by analyzing the universe of activities across products -- the way that the industry participants and investors approach the marketplace.

So, for the first time, when we have all of this information in place, we'll be able to see data the way the participants come to the marketplace. And that means cash, ultimately, we hope derivatives in the future, exchanges over the counter, broker-dealers, other actors, in a harmonized fashion.

We think that the key to this is not just having regulators have access to the data but to have the legal and compliance community and the firms also be engaged in that.

And we think that the firm staff can become the first line of defense, much like we think about community patrols in the police departments. Right? They incorporate local people to bring -- to identify problem sets.

We think that by empowering the firms and ensuring on a consistent basis -- now remember, we have over 4,000 broker-dealers that we have to deal with in terms of our FINRA jurisdiction.

We want to empower them with information that will allow them to identify those bad actors and bad practices even faster than we can because nothing is better than having them knock on the door and say, stop, and cease and desist on the spot, in ways that we can't possibly do when we start police 700,000 registered representatives and 4,000 broker-dealers. But the firms can do it if we give them the right tools.

So we're reconceiving in the future what that looks like in the balance of information, and we want to use that information to be able to empower them in ways they probably can't do today. Bigger firms probably have all that day to day, but some of the medium-sized and small firms don't today.

We think that our inquiries will be much more targeted, much more focused, which will reduce the time on extraneous issues, and much more efficient in terms of not just from a regulatory perspective, from the firms' perspective.

The firms will have much more targeted inquiries, and we think that each of those inquiries will have higher yields because we'll have much better information before we start the process.

Plus, the faster response. As we talked about before, the local compliance really will help stop problems before they become problems, we think.

Policymaking. As we said before, having the universe of activities and being able to see across the marketplace will allow us to be able to make policies based on facts and figures, to support our efforts to understand better the impacts of those things and make sure that the impacts of our policies and rulemaking are effective and efficient.

This is not smooth sailing. There are many challenges to accomplishing what we're talking about today.

First is there's a privacy issue. We've heard it before. We know it's privacy issue going forward, and we believe that this data can be protected, that we don't need PII, taxpayer names and addresses and tax IDs to do the kind of analysis we talk about. Ultimately, you may need it during an investigation, but you don't need it during the analysis and data collection in a central database to a large extent.

We think that there are many things that can be done which will help us be much more comprehensive as we go forward.

We know that as we implement something like this and the model-building takes place there are going to be false positives. We have to tune models. There are times to make this more efficient, and there's an investment that we're all going to make to do that. So it's going to take time, and there will be new development as we go forward.

Third is that melding this analysis with boots on the ground -- and Andrew just talked about the need to have examiners and people engaged in this process. There are not just analysts who will do it, but there will need to still be people who will go visit broker-dealers and go visit exchanges and talk about what's happening and talk to participants, to understand and investigate issues. And striking the right balance of what the mix of staff is going to be an interesting challenge for us, to know where those levels are.

And, fourth -- and I don't want to de-emphasize it because it's all built on this -- is harmonizing data. Data definitions, data cleaning, ensuring that the information is complete and accurate is a critical element of making all of this work. So we need to make sure that we invest the right time and effort to ensure that we have the proper foundations because if we don't it's the old adage of "garbage in and garbage out."

So you need to be sure that you invest the time to think through the issues, harmonize definitions, ensure the data are comparable, and you know what you're dealing with and how it's put together over time.

Last, and certainly least, is the investment level. And I think that the investments that regulators will make will be small compared to the investments that the industry will make to ensure that they can deliver this data efficiently and effectively. That's a process that needs to go underway, and we need to be respectful of all of the investment that's got to be made as we trade off time and investment and performance as we go forward.

But, in the end, we believe the results

are going to be dramatic. We think that they're going to be critical for helping to restore investor confidence as we go forward. Regulation will create policies and rules that are more comprehensive and timely. Bad behaviors will be identified more quickly and correctly and more efficiently. And examinations and enforcement actions will be dramatically more efficient for regulators and industry participants overall.

In the end, we think that this is going to change the landscape of what regulation is, and we're only at the very, very beginning of this revolution because we're really at the very beginning of what technology can do, efficiently and effectively, for us.

Thanks.

COMMISSIONER O'MALIA: Thank you. Did I read an article, and was it correct, that was contemplating the CARDS system and that said it would be the second largest only to the NSA computers?

MR. JOACHIM: The article CAT was, or

CAT/CARDS.

COMMISSIONER O'MALIA: Okay.

MR. JOACHIM: Yeah. I mean, giving you order of magnitude numbers, just a back-of-the-envelope size of the data that will be in CAT, just in equity and options, our estimate is north of 7 petabytes of data for storage. And that's north of that.

So we were talking about hundreds of millions of -- how many? It's 140 terabytes of data that we were saying. And it's 1,000 terabytes in a petabyte.

So, orders of magnitude, just on the CAT side. For CARDS, probably our estimate now is about a petabyte of data. So, together, we're talking about tremendous amounts of data. And we're talking about, when we talk about ingestion of data, billions of rows of data every day.

We know the technology is there to do this, and the technology today to do it efficiently is a tiny fraction. I'll just give you a sense.

When we did OATS, originally, OATS,

three or four years ago, would have about 2 to 3 petabytes of data in storage. Just OATS as the order audit trail for equities was about 2 to 3 petabytes of data and ingesting a billion rows of data a day.

But the cost of doing that in the cloud today is a tiny fraction of what we were spending then to store data.

COMMISSIONER O'MALIA: So a petabyte is 1,000 trillion bytes.

MR. JOACHIM: It's 1,000 terabytes.

COMMISSIONER O'MALIA: Or, a million billion, either way, it's a bunch of zeroes.

MR. JOACHIM: Yeah, it's a lot. It is a lot of data.

COMMISSIONER O'MALIA: All right, next is Rob Creamer.

MR. CREAMER: Once again, I'm Rob Creamer, CEO of Geneva Trading and the Chairman of the FIA Principal Traders Group. I'm grateful for the invitation to speak with you today on behalf of the FIA PTG.

The FIA PTG appreciates the opportunity to speak here today on the subject of market surveillance. This is an extremely important issue, and the ability to accurately identify instances of abuse and disruptive trading practices in a timely manner is essential to the welfare of our markets.

The FIA PTG has urged the industry, its critics, the media and, most importantly, regulators to rely on data and empirical analysis before making claims about the health of the industry or any of its participants. Only with data should a conclusion about the fairness of markets be reached. Only with data should the course of action be prescribed, and only with data can the results of these actions be monitored.

As markets continue to evolve and mature, we feel that the Commission must be able to maintain its ability to distinguish facts from hyperbole in order to maintain the trust and confidence that our markets deserve.

Before I make any suggestions or take

any questions from this Committee, I want to make it clear that until the presentation today I knew very little about the Commission's current surveillance capabilities or practices, nor did I understand the specific challenges that it must overcome.

With that said the Commission should take advantage of the work that has been done in the industry thus far to address this very similar need. For instance, the SEC has successfully delivered a cost-effective solution for capturing trade data in its MIDAS platform. This should serve as a template or road map for the development of a solution to address market data for futures and swaps.

When it comes to audit trail-level data, fortunately, much of the work in the futures industry has been done by the SROs which have developed systems to monitor, scrutinize and enforce the market on its participants.

The Commission should leverage this work rather than recreating it. It should focus its efforts on developing a platform to accurately harmonize data across venues and acquire, or build, tools to identify and analyze patterns of interest.

This should be done in a manner that preserves the integrity of the data between SROs; allows for rigorous, efficient and flexible analysis; and respects the confidentiality of the participants whose activity is represented in this data.

We commend Commissioner O'Malia and this Committee's efforts to assess the Commission's ability to surveil today's markets and strongly support the efforts to make improvements where necessary. We welcome the opportunity to assist the Commission in this worthy endeavor.

I want to make a point that was a follow-on as well from the previous panel. It was in a topic of conversation surrounding the movement of trading activity from the floor to an electronic world, and the topic was now it's all happening out in these servers out in cyberspace.

And I think a lot of people in the industry, certainly not on this Committee or dealing with this all the time, but in general, don't recognize or give credit to the fact that in an electronic world all of the activity of the participants is recorded and kept and archived. And that never happened before. A day after trading, much of that information was lost. Conversations that were had -- it's gone forever.

And there's never been a more effective time at getting this right and being able to do a proper job in surveilling our markets.

I'll also point out -- and Bryan Durkin mentioned, at least with the Globex platform, a lot of the tags and data that is captured in the system -- many people fail to recognize or appreciate the level of data that's already being captured by market participants like Geneva Trading and the principal trading firms that are members of our group. It drills down on a very granular level and provides an enormous amount of detail.

So we strongly support this effort. We hope that we can provide assistance. We look forward to the years to come and improving this process.

COMMISSIONER O'MALIA: Thank you. Dave?

MR. LAUER: Thank you, Commissioner O'Malia, for inviting me to testify here, and thank you to the Committee for listening and considering these ideas.

My name is Dave Lauer. I'm here with KOR Group and also the Healthy Markets Initiative.

KOR is a market structure research and consulting and advocacy firm. Healthy Markets is a coalition of firms that we're helping to put together to advocate for market structure changes primarily in the equities market.

My background is in technology and trading. I spent eight years designing, building and operating low latency trading systems, working very hard on latency minimization, measurement and quantitative analysis of market data and trading.

Some of that experience was at Allston

Trading, which is one of the larger futures trading firms out there -- an HFT. Although my focus was always primarily equities, I do have some futures trading experience.

I apologize ahead of time. I will mention equities from time to time. I know that's beaten a bit.

I will also say silly things like I think the SEC and CFTC need to work together and stuff like that.

So today, I'm going to talk about from a technologist's point of view what I think the shortcomings are of current approaches to surveillance.

And I have the advantage of not having to deal with institutional resistance, cultural issues, political problems. So I can sort of speak from scratch -- if I were going to do it, here's how I would do it.

That may not be practical. In fact, that's obviously not practical, but I will also talk about what I think can be done today to enhance surveillance capabilities and also how we can get to where I think we should go for the ultimate 21st Century surveillance system.

I think that part of that is going to revolve around what I've called technology-centric regulation and surveillance.

And I can't overstate this enough, and I'll get into it a bit in my presentation, but it's a fundamental shift in how technology is used and the way that technology transforms regulatory operations and an approach to surveillance. It's something that many firms in the industry have adopted in terms of how they operate, and ones that haven't have generally fallen by the wayside.

I'll then describe the surveillance system. I would like to start out by saying it is not meant to reproduce CAT. CAT is something different. CAT is important. I don't mean to denigrate CAT. I think that's where we ultimately need to go.

But I'm concerned that CAT is far away, and I think that there are issues that can be dealt with now and that we should be focused on dealing with those as quickly as possible, again, as many have stated here, to help with investor confidence issues, to show that regulators are on top of things, that SROs are on top of things, to become -- I think it can be stated to be effective, advanced and intimidating with our surveillance capabilities and to be visible, frequent, regular and transparent.

And I think transparency is a theme throughout this presentation.

I want to start with a quote from the director of market surveillance technology for an international regulator. I thought this was just a very important idea.

"Regulators that are serious about improving compliance and protecting investors must embrace technology and adapt their organizations to the realities of 21st Century trading. This will require courageous leadership, a tectonic shift in thinking and a radical reallocation of budget and staff resources."

So what are the shortcomings in our current surveillance systems?

I think that we have technology shortcomings, and fundamentally, one of those is an issue of timestamp synchronization and resolution. I know that this was identified in previous TAC working groups.

Certainly, synchronization across market centers is much more of an issue in equities markets. That doesn't mean it's not an issue here.

We are the point, technologically, that we can synchronize to the microsecond. I think we were there a couple years ago. I certainly always worked on systems that were synchronized to the microsecond, at least post about 2009.

But that technology is there. It's readily available. It's not expensive.

This is something that needs to happen right away if we can ever hope to be able to do effective cross-market surveillance and, as I'm going to argue, cross-asset class surveillance as well.

I think that along those lines the analytics that are being used are certainly effective for some of the things that they're looking for -- layering, spoofing, these types of things -- but there are more advanced analytics.

I recently did a consulting project designing intelligent, adaptive kill switches using predictive analytics, using concepts like normality modeling, anomaly detection, dimensionality reduction, unsupervised learning techniques.

These are all techniques that are well understood in data science and predictive analytics that don't appear to be used actively in the surveillance market right now. I know there are some vendor products that are heading in that direction.

And I'll continue to push that not only should we look to SROs, who have excellent surveillance capabilities because they've been spending so much time doing that, but we should look to the vendor community as well. There are now companies that dedicate themselves just to surveillance and surveillance analytics, bringing machine learning in for parameter optimization -- the things that were talked about by FINRA.

In terms of how do you optimize and tune these models, well, there are systems for doing that in an automated way that are far superior to attempting to do that manually and by humans.

I think that we should all recognize that there are conflicts of interest inherent with publically traded SROs, and the general perception in the industry is that leads to poor enforcement, especially with their biggest and best customers, which is why I will advocate for a centralized surveillance platform operated by regulators though still accessible for SROs as way to centralize all of the operations and reduce duplication across SROs, which could ultimately be a cost reduction for them as well.

I think we should all be concerned that there's a complete lack of cross-asset class automated analysis occurring right now. It doesn't mean that the data are not there, but it's generally tip-driven rather than algorithmically monitored. And I think that's a concern, and it's almost impossible to monitor it anyway given the issues around timestamp synchronization and resolution.

I think if the CFTC and regulators want to catch up to the industry, which is an oft-stated goal, the way to do that is by engaging the industry in a deeper and more meaningful way than has been done before.

I think the Technology Advisory Committee is fantastic, and I absolutely commend the CFTC for doing this and the TAC members for spending their time here. I think that it's an excellent model for how you engage the industry in one way, and I think the same should be done for understanding manipulation.

And I think the industry has a deeper view of manipulation beyond just your standard layering and spoofing activities. For example, it's industry practitioners that might be able to explain the math behind how someone would manipulate interest rates across the yield curve -- for example, across assets, across products.

That's a level of understanding that's in the industry, and that can be tapped and is readily available, especially with proper incentives. And I'll spend a little time on that in a bit.

Another issue to highlight is that some practices do make it difficult for brokers to properly watch their customers. One example is that some futures exchanges don't provide drop copies to what are called parent participants of sponsored direct access customers. So there's something specific that could easily be changed.

I think that the biggest issue for the CFTC and for regulators is institutional resistance. Certainly, the size of the problem and where to start is an overwhelming issue. Money and budget is a serious hindrance.

As Commissioner O'Malia said, the CFTC's biggest problem is big data. I think that falls into a shortage of the right technology skills and knowledge and a resistance to a technology-centric approach.

And I'll get into what I mean by technology-centric approaches, but the core of it is that technology is not simply a tool that makes existing processes more efficient. It's something that creates new capabilities, new processes, and revolutionizes existing ones or eliminates them.

I think the political frictions within, and across, agencies is a huge hindrance to a proper surveillance system, and surveillance is a perfect example of something where the SEC, CFTC and SROs should all be working intimately together on a shared platform.

And then, of course, as I said before, I think there are conflicts inherent in the publically traded SRO structure, where you would find a lot more investor confidence, a return of investor confidence, if the regulator were able to be on top of things as well.

So, as I said before, technology is a tool, but it's much more important than that, and this is why we need a new approach to surveillance.

Technology has become part of the culture across this industry. The technology-centric approach is critical for success in financial services. There's no way around it anymore.

And participants in financial services don't see individual assets. They don't see individual products. They see the market.

They don't trade in the futures market, in general. There certainly are some that do. But they trade across markets.

I think we all understand this, and certainly most of the people who trade in this room -- that's true for them.

And it can't be stated enough that you can't do this with attorneys, and that's no offense to GS-13 and 14 people in the room.

You need experts. That's what these

firms have. That's where they're unleashing huge amounts of money. The best programmers in the world, the best traders, the best engineers, the best DevOps, the best surveillance and compliance technology experts -- that's what you're facing.

So that's why I said earlier that a radical reallocation of budget and staff resources is necessary. This is what regulation is going to be in the 21st Century. It's a different world. It's not the world of 15, 20 years ago that, obviously, I wasn't participating in.

And I think that never has the need for expertise been greater or the resource gap been wider.

So what does this next generation surveillance platform look like?

It's got full cross-asset class coverage, and I think that that's the important first step and one that has been missing, unfortunately, even from CAT although we say that eventually it should have derivatives in it.

To me, that's a foundational element,

and part of that might be a bias from my experience. You know, I've spent time at firms where futures to equities arbitrage was a primary strategy, and so I understand that market better than just siloed trading strategies within the futures market.

But there are other considerations as well aside from high-frequency trading. There's broker front-running. It's certainly not unreasonable to expect that you will find instances of cross-asset class front-running when that is not being looked at right now.

Obviously, this system is high-performance. It's able to do real-time analysis. It has what I've called a strategy, or a trader registration and identification system. And that's a problem that has been confronted by many people at many times.

How do you identify people? How do you identify traders across asset classes? The large entity identifier is going to do that.

But right now, if you want to do that,

you can have people register, submit all of the identifiers they're using, get back a unique identifier that they use for trading across market centers and have that propagated down in a fixed feed from the market centers to regulators. And that's the same thing that I proposed two years ago before the U.S. Senate in my testimony on electronic trading.

The next step is best-of-breed analytics. And I have no doubt that SROs have incredible analytics that they are using right now. There are also analytics that have been developed by vendors. There are practitioners who want to help regulators with their analytics systems.

But we don't have a framework for what I called pluggable analytics. That's a standard pattern in computer science, and it's one that needs to be adopted so that people can design analytics who are not a regulator.

The public could be designing these analytics. We can be designing contests. You can have people find the best market manipulation algorithm, find the best cross-asset class manipulation algorithm; you get a million-dollar prize.

You would get tens of millions of dollars of effort for that million-dollar prize. That's, again, a standard model being used in other industries and even in other government regulators.

SROs could use this platform to leverage this platform and reduce and eliminate duplication. It doesn't make sense to have so much surveillance technology.

I think it makes sense to have lots of surveillance groups at every point in the chain, from the firm, the broker, the SRO and the regulator. You need people looking at everything, every step of the way; I totally agree with that.

But you don't necessarily need this duplication of technology. By centralizing resources, the cost savings is significant.

Again, you need advanced machine

learning and parameter optimization, and I'd argue that this is the perfect platform that you can use to engage academics and the public.

I think there's a data crisis in this industry. There's a crisis in academic research. Every academic that I speak with will echo this, and in fact, it was just recently written about by Maureen O'Hara and Robert Batallio, whose quote is in my written testimony as well.

We have a serious problem in studying markets and getting access to the right data, and this is the perfect example of something that if you open up this platform -- and I don't mean access to raw data. I don't want people to think that I'm saying people can download orders with participant identifiers and reverse-engineer strategies.

I think there are technological ways of providing APIs and examining data in and data out to ensure that nothing is going across the border that has any concerns around confidentiality but that can still be leveraged as a platform for doing advanced studies by the public, academics and practitioners.

Now this is another joke, of course, to talk about how long it would take to build something like this, but private firms could have this operational by the end of the year. If they started today, it would be up and running by the end of the year. That's all I know.

I've never worked in government. I don't know how long these things take. But, if it was me and I was running this project, it would be up and running by the end of the year.

And this is just a broad overview showing that you have market centers sending privilege fixed feeds with participant identifiers into a cloud-based computational resource, and you have algorithmic analytics, machine learning, trending and alerting.

And another important thing is advanced data visualization. I'd love to see what the CME has done on this. I think everybody has done different things with visualization, and this is a world in technology that has become revolutionized over the last few years.

Visualization of big data has made tremendous strides, and it's something that regulators should be investing substantial resources in.

I keep talking about big data. I just want to take a step back.

I know with CAT we talked about 7 petabytes of data and how that's an overwhelming amount of data. I hate to say it, but people in other industries do laugh at that.

NASA deals with exabytes. That's 1,000 petabytes, ten to the 3rd petabytes.

You know, other industries -- Google, Facebook. I mean, you have people using open source platforms to manage order of magnitude more data than we have in financial services.

So I know that the data issues are intimidating, but these are problems that have been solved.

So what can we do today? Again, I would

urge the industry and SROs and regulators to adopt a technology-centric approach. I think that engagement with the industry in a serious and meaningful way is a critical first step to the CFTC being able to catch up to the industry and maintain pace, and that's what I think the focus should be, as well as making a definitive data set available across asset classes with high resolution, clock-synchronized timestamps, first, studied by academics and the public.

And I think that what we're doing here and looking at what data is currently available is also a critical step.

I think over time regulators should become the primary surveillance group and that that can happen with this next generation surveillance platform, and this is how regulators can catch up and can leapfrog the industry.

Thank you.

COMMISSIONER O'MALIA: Thank you, Dave. Trabue, wrap it up.

MR. BLAND: Thanks. We're almost an

hour and a half into this. So there are a couple things I just want to say, very quick points.

First of all, that's an excellent presentation. I would like to say that the CFTC actually already does a lot of this. I've actually sat in with Matt Hunter's group before, and a lot of this cross-asset analysis, a lot of the tools, and the flexible tools, are being built in-house right now at CFTC with very limited resources.

Another point I'd like to make is that you have the data. I was going to bring up the data slide. That's one of the best slides I've seen and one that I'd like to copy at some point.

But you're bringing in a lot of data, and you've got the staff. You've got a lot of the analytical tools.

My question is, are the right questions being asked?

When I talk to our market surveillance groups, I ask them; I mean, what are you looking for?

I mean, we can build reports, and we can build hundreds and hundreds of reports to look for discrete things. But we want them to focus on like two or three areas where they want -- you know.

And all of it really kind of goes to is the market performing well; is the market healthy?

And, you know, that's what I -- the one recommendation I have for the CFTC is just to make sure and don't get lost in the data.

I mean, you could actually be like Russell Crowe in a Beautiful Mind. You're staring at all the newspapers up on the wall, and you're trying to figure out some kind of crazy pattern over there.

You don't want to do that. You want to make sure that you have a clear process of how you're going to analyze this and questions you want to answer.

With that, I'll throw it out to questions.

COMMISSIONER O'MALIA: Anybody have any

questions?

(No response.)

COMMISSIONER O'MALIA: But some of the things that I'm trying to think about here:

Jorge's slide, massive amount of data we already have.

Opportunities to do cross-asset, cross-market. How do we bring this all together? Should there be a coordinating structure? Who should really lead this kind of effort? We speak a lot to the SEC. We speak to FINRA.

But we're clearly not doing enough to leverage this as opposed to trying to replicate, and I think Dave's slides kind of caught on this.

It seems it would be extraordinarily expensive if each of us tried to have our own data set and exclusively tried to do our own surveillance and solve all the same problems that each other have already had.

So how should we think about this in terms of priorities?

Should we have it all? How do we work

with the SROs that do serve as the front-line regulators and who rely on that? Another question I have -- and for you, Rob -- is with the order message data. Is it something moving to the next level of order message manipulation? What do we need to think about in that area?

But those are the couple observations I have. I see there might be a slide or two coming up. Is it -- who's down there? I can't -- is that Jeff, or is it -- who's got --

Oh, both of you guys. Adam has got a tag up.

MR. ADAM LITKE: So I have a question actually along the lines -- some of what you were just saying, along the lines of cross-agency cooperation.

When Dodd-Frank was written, it was envisaged, although it didn't -- it started out with the idea that there would be something called the National Institute of Finance, which kind of morphed into the OFR but without the full vision that was behind the National Institute of Finance, and they were supposed to be a systemic risk agency collecting data and doing research on systemic risk in the markets.

You have about three organizations or four organizations here that are all collecting data based on surveillance, to some extent, and market manipulation rather than systemic risk.

But, as you said, you're all interested to some extent in the same data, not to mention whatever you would do in a cross-border cooperation.

So I guess the question is, is it possible, politically -- and I'm sort of going to ask Bill because he's the one stuck at the OFR. Is it actually possible, politically, for these groups to get together and share?

MR. NICHOLS: It's not possible, politically, for me to answer that question.

(Laughter.)

MR. ATKIN: Jorge, I just have a procedural -- process question for you. How are you conducting the harmonization process, and are you going backwards to the sources of data, back to the participants?

And then my second question along that line is, can you help me understand the definitional problem that you're facing? Is it a nomenclature problem, or is it alignment to meaning problem?

It seems to me that all these data attributes are contractual. They are defined in the terms of the agreement. And I'm just wondering what the nature of that definitional challenge is.

MR. HERRADA: Sure. Well, I'm actually going to throw this over to John Rogers who's been overseeing the harmonization process. So John is our CIO.

MR. ROGERS: So that was a good question one. Jorge promised me that he was going to do this. So let's see. I think that it's really not so much a nomenclature, you know, issue. It is really -- I forget the other choice I had in answering your question.

Meaning. It is really a meaning question. And it's not so much -- it's really about how each of the SDRs are populating this data, which, of course, is data that they're getting from the submitting parties, and does it actually mean the same thing across the board, you know, across each of the SDRs.

So the harmonization is to make sure that there's harmony in meaning.

While there are rules that talk about what each attribute means, each field means, there are interpretations of those rules because people, as we all know, read words and derive different meanings from words.

So harmonization, first and foremost, is about the SDRs and CFTC getting together and making sure that we all have a common understanding of the meaning from our perspective so that when we pull the information together we're expecting to see things that mean the same thing.

It doesn't mean that one interpretation

was more correct than the other. It just means that now we have a common understanding. So that is a lot of what this is about.

As far as who is interacted with, the focus of our harmonization effort has been on our interaction with the SDRs, but we know that in many cases this information is filtering back to the people that are submitting the data.

And there is an interest generally, or probably largely, in making sure that the consistency starts at the source. But our focus has been, at least to this point, on the information that we are looking at from the CFTC and making sure that there is an understanding of a common meaning across all of the SDRs.

COMMISSIONER O'MALIA: You know, there are also efforts that we should be undertaking with regard to harmonizing internationally. Europeans have had reporting since early February. Other jurisdictions are bringing on their SDRs.

Something that we're not moving quickly enough on is setting up international agreements to share that data. There's no agreement required today if we wanted to begin harmonization efforts across jurisdictions. That would be a worthwhile effort, to at least make sure that when we do get to a sharing arrangement that we're comparing apples to apples.

Steve and then Walter.

MR. JOACHIM: A couple of things. First, let me correct a couple of data points I put out there for you, or clarify them.

Actually, while we were eating, I had somebody actually pull out the CAT RFP to see what was required at year five of CAT. It's 21 petabytes of data required for storage for the CAT RFP and the ability to process 95 billion rows of data per day. So the plans are large.

And I would say to you, Dave, we have actually talked with every major technology vendor and many minor technology vendors about the problems that we're dealing with, and quite frankly, they all think that we are on the very cutting edge of what technology does and close to the bleeding edge in terms of some of the challenges that are in terms of processing and doing data.

So it's not just about ingesting the data and storage, and we use those things as relative measures for people, but it's how you've got to match the data, bring it in play so you can use it and leverage it that becomes tremendously complex -- and do it on the fly, where if you have one problem any day your back-up becomes an enormous task.

So the nonstop processing of that becomes a problem also.

Let me try to address the issue of working together. I think the thing we have to be very cautious about -- and I think I can say this from an SRO perspective; it's hard to say from a government perspective, I think -- is that we've got to be careful not to try to boil the ocean, or what I call boil the ocean, when you start to harmonize data and get standard approaches.

I think we have to look at what our

purpose is in regulation and make sure we're thinking about those purposes. And, as we harmonize those efforts, we have to harmonize them certainly first across what the markets' regulatory -- or the financial services' regulatory -- community needs first because if we're not careful, at least in my experience, both on the industry side and now on the regulatory side, many people will look at data and define it differently. The same field could be defined for different purposes.

And the more you try to satisfy everybody's need, the less likely you satisfy anybody's need. So we have to keep in mind what our purposes are. It's one of the barriers to moving quickly sometimes -- is everybody agreeing.

And, quite frankly, we've got to remember that when we do collect the data the industry has an enormous problem delivering it also because they've not compared across firms.

So much of the data that we use are data that we gather from broker-dealers, not just from exchanges. And when you do that, every broker-dealer gathers the data for their own purposes and not for our purposes. Going back and getting them to modify that in a way that is consistent is really what slows the process down, much more than what we might think of as bureaucratic action, because getting all the data in a place that we can use and leverage is a critical element of making this work.

So you can't underestimate the challenges to ensure that everybody can deliver the information you need, understands it and then actually executes properly around that. It is a daunting task when you start the process, and the broader we get, the more we cut across markets, the more complex that becomes.

MR. HAMSCHER: I think Steve actually at some level touched on what I was going to say.

I was going to start off with the smart-alecky remark that if you can't even agree on timestamps, you're a long way from agreeing on the terminology of contracts and sort of straddle swaps and what not and trying to standardize on that.

And what I'd like to know first of all is, from what Dave said, is it true these markets do not even have a consistent clock?

If that's true, what's the obstacle to them having a consistent clock, and is that in fact part of or one of the first things you'd want to do in harmonization?

It seems to me, as Steve was saying, don't boil the ocean. You know, start with something that is very tangible.

I know that when we did the Flash Crash study, one of our problems -- many issues -- was simply that not only did we not know what the timestamps necessarily represented but different exchanges had different interpretations and ways of representing data about when a hold was placed on trading.

So there are some very basic things about timestamps and events at timestamps that seem to me would help a lot and seem quite tractable, but you're not going to get everywhere at once.

And so, once again, I'm just directing this kind of at John. Is there something you can do in the short term to get started on this?

COMMISSIONER O'MALIA: Maybe on the timestamp issue, we could ask somebody who's got some skin in the game, maybe Chris or Rob, how you deal with timestamping. Do you do your own timestamping, or do you accept the exchange timestamping?

MR. LORENZEN: As far as we do it, we look at each exchange, and obviously, everybody is reporting times that are different, and we try to normalize them ourselves. And it helps in looking at trades in a post-trade analysis way.

But, yeah, I think it's extremely important from a regulator standpoint that you're able to take a look at trades that are going to match up with one timestamp.

COMMISSIONER O'MALIA: As I saw flags go up, I think it was Keith, Chris Concannon, John

Lothian, Marisol and Richard.

Am I missing anybody?

(No response.)

COMMISSIONER O'MALIA: So, Keith, you want to make your comments?

MR. FISHE: Sure. I have two comments. You had mentioned timestamps, and I think, Dave, you might have been referring to the working group that Chris, myself and Jorge were in. We presented the first kind of alert on timestamp issue.

And it's not that you can't synchronize server clocks. It's that they drift after you synchronize them. So you can get actually deviations in milliseconds, not microseconds.

MR. LAUER: Just to speak to that, I mean, there are technology solutions, and they have been around actually for quite some time.

MR. FISHE: Well, you can sync them, but then the clocks themselves drift.

MR. LAUER: They absolutely do.

MR. FISHE: And they drift at different

rates.

MR. LAUER: But if you have -- I mean, this is a well -- it's a problem that's been solved, and everywhere that I've operated at has been able to solve the problem.

MR. FISHE: All I can do is alert you to the issue.

But the other comment, excuse me, is the issue in terms of data and data meaning, which I'll throw back to Jorge, and whether you ever anticipate coming to a conclusion with data meaning or whether it will just go on and on.

MR. HERRADA: All right. So, as far as data meaning, John -- I pointed to John, and John pointed back to me. So I guess I have to take this question.

Anyways, you know, I think the clever way that the folks in ODT have been sort of facing this question and how we've been dealing with it is -- the whole idea of the phased harmonization process I think is a good one because, yeah, we don't want to boil the ocean. There are so many different fields that one could go after.

So the idea with the phased harmonization is we picked -- you know, I forget whether it was 20 or 30 fields in phase 1 and then another 20 or 30 fields in phase 2, and then there's phase 3 and phase 4.

But the idea is focusing on the most important fields first and focusing on those and trying to get standardization.

Will we get harmonization completely, on every field? You know, there are always going to be new fields that are going to be invented. There's always going to be innovation when it comes to the financial industry.

So you'll never get -- you're never going to be done, but the key is to try to get the most critical fields harmonized so that we can have agreed-upon ideas.

And, John, you like you're about to say something, so go ahead.

MR. ROGERS: Well, I just wanted to add, in harmonization, we are looking at things like clocks, not necessarily millisecond drift but standardization as much as we can. In some cases, there are questions about milliseconds and microseconds and those sorts of things, but those are the kinds of things that is just one example when we're talking about timestamps that we're focusing on.

MR. FISHE: And I had one more comment, something that Steve had said, on the issue of false positives.

I realize that these programs of trying to collect all this data are really going to be quite costly to all the different regulators. And I'm sure that you're going to really look at the expected benefits before the large investments, but I wonder if you're going to look at the cost to firms of dealing with false positives.

MR. JOACHIM: Yeah, very quickly, the answer is absolutely, we need to think about that, and we are thinking about it constantly.

And, as we bring the data in, we have to be very careful that we minimize the disruption to firms, but we have to work together.

The concept is -- and I think Dave or one of the participants talked about how important it was for the industry to work in cooperation with us because if we do it together we're much more likely to minimize the disruption and minimizes the false positives as well as false negatives, of course, to be sure that we're getting an effective tool.

So, yeah, I think, absolutely, we're sensitive to that. Absolutely, we have to consider that. Absolutely, we need to work together to be sure that we minimize that process.

COMMISSIONER O'MALIA: Chris Concannon.

MR. CONCANNON: Thanks. Just quickly, there was a recent book out on a claim that the exchanges didn't have subsecond data on activity.

I'm just curious. It sounds like you actually do have subsecond information?

MR. VRABEL: Subsecond meaning less than a second?

MR. CONCANNON: Yes.

MR. VRABEL: Yes. So our regulatory systems maintain data down to the millisecond, and within milliseconds, we are able to sequence events so we can tell which event occurred in priority.

So it gives us microsecond-level sequencing with millisecond timing.

MR. BLAND: We do the same, and we use a visualization tool called SMART that we can look down and see how trading is done, right down to trade-by-trade or by whatever other elements.

MR. CONCANNON: I guess the author didn't actually speak to anyone in the industry about his claim.

A second question is just with regard to the CME and bond futures, where you do all your surveillance, obviously, on the treasury futures -- the bonds.

Correct me if I'm wrong, Steve, but TRACE doesn't actually collect information on treasury trades, cash treasury trades; is that --

(No audible response).

MR. CONCANNON: They don't. So does anyone surveil the treasury market today, other than the bond market?

(No response.)

MR. CONCANNON: It's one of the biggest asset classes on the planet. I'm just curious if anyone surveils it.

(No response.)

MR. CONCANNON: Okay. Yeah, I don't know. A lot of people trade it. Maybe retail is involved. I'm just curious. That's all. Thank you.

COMMISSIONER O'MALIA: Mr. Lothian.

MR. LOTHIAN: Steve, we heard about, or you talked a little bit about, some of the problems of adding in data as you're getting it and reassembling the data.

I wanted to ask you, one, where are you guys at in terms of looking at day-to-day data, okay?

Sometime back, a couple of years ago, I was told that you were somewhere -- and this was probably 2012 -- that you were somewhere in 2007 in terms of looking at the data day to day.

The other question I have is the Flash Crash. How long did it take for you guys to assemble a complete set of data that you could, say, deliver to the SEC or share with other parties comparable to what we heard with Bryan with the futures markets?

MR. JOACHIM: Sure. Actually, I'm not sure where you got the 2007 number from, and I'm not really sure what that refers to.

We ingest data every single day. If we fall behind, we can't ever catch up. So we are current in the data we bring in every day.

There have been segments of markets that have had difficulty submitting data to us from time to time, that we work through those problems, and sometimes certain segments fall behind, and ultimately, we can catch up with them.

But if we had an overall market problem, where we couldn't ingest data quickly, it would be a problem.

From an analytical perspective, some of our patterns are relatively current, meaning day to day.

Some of our patterns look at historical behaviors that run across multiple days or multiple months and time series. So they're looking at data over time. So they don't look at every single data every single day.

So different patterns have different kinds of timeframes and periods in which they work, and we look at those appropriately based on which behaviors we are trying to catch and what data we need to put together.

So we, in general, think we're pretty current and try to maintain currency with our ingesting.

When you're saying we, I assume you mean FINRA, in terms of what we're talking about.

Right.

And keep in mind that what we're talking about is the markets that we surveil for.

Does that answer your question?

MR. LOTHIAN: Right. There was a question about May 6, 2010, how long it took to get a complete set of data to be analyzed.

MR. JOACHIM: Yeah, I don't know the answer to that specifically. I can't answer that.

I can probably get you the answer to that question.

The question really starts with, what was it that people were looking for in that point in time, and I don't know the answer because I wasn't directly engaged in that. I just don't know.

MR. LOTHIAN: Okay.

COMMISSIONER O'MALIA: Marshall.

MR. TERRY: Just a quick question, and this may be naive, but the question was asked about working across the different agencies.

I don't know why you folks, you know, Commissioner O'Malia or Acting Chairman Wetjen, like the question wasn't posed to you.

I'd be curious as to what -- I don't know the answer to the question, what's the road block to -- or is it happening or what your thoughts are because I think, Dave, I understood about half of what you said, but I think he was as much a solution-driver as he was, hey, here's the problem.

I thought a lot of what you said was let's go get the solution, and so I struggled a little bit, trying to figure out if we have some of the actors in the room, why can't we get an answer as to why we can't get this cross-agency?

I mean, I work for a small hedge fund. I can't run multiple silos. It just doesn't work.

My data has to be put in a world of regulatory reality. If I don't use a common data set, my regulatory risk is exponential, meaning that if I drive a different data set for marketing or if I drive a different data set for regulatory purposes and I can't explain that difference, it's career-ending.

So I think, Dave, you were spot-on in a lot of what you're talking about. Again, I don't understand all the high level or the granular stuff.

But just back to the point, why is there -- can you speak, either one of you, to if there's resistance?

Is it possible because it just seems so intuitively correct to align the interests?

CHAIRMAN WETJEN: In my somewhat limited experience with this, there is -- we've entered into a number of information-sharing or data-sharing agreements even since the beginning of the year. I think the observation made over here on this side of the table has been accurate in the sense that it tends to work more easily and comes together more quickly if it's rather targeted in nature.

I don't think it's a political issue. The obstacles we run into are legal ones. And that's true on the international front, too.

But we have Section 8 requirements under the Commodity Exchange Act that requires us to protect and keep confidential any information or data that we have here at the agency, and so that places limits on how and when and what we can share with other domestic regulators. And the same is true on the international stage as well.

And, to further complicate it, there's a variety of jurisdictions in Europe, some of which have even more stringent global, if you will, privacy protections that make it rather difficult to enter into these types of arrangements.

So I don't think it's politics; I really don't. It, quite literally, is legal impediments that have be managed and worked through. And, as I said, we've done it. We have arrangements with FERC in place, a couple of them, and we're working on another with a different regulator.

So it's possible. It's been done. It's not always terribly easy, but it certainly can be done.

COMMISSIONER O'MALIA: I would kind of go back to the Flash Crash as a good example where a crisis did catalyze action, and we shouldn't have to have a crisis to do this.

We probably -- if they are legal

challenges, what are they?

Let's put them on the table. Let's start to work through them.

I think we're leaving a lot on the table right now if we stick to our little silo and at least not think about what the other options are going to be.

And I know we do have some creative surveillance people that are trying to look at cash markets, look at alternative markets and things like that, but I don't think we've done enough in this area.

MR. TERRY: I mean, just as a small -- again, I work for a small hedge fund.

I mean, the regulatory cost is extraordinary. And having to sit with multiple regulators and answer the same questions but not have it centralized, it's amazing to me, and I think there would be huge pickup for multiple reasons.

So I would -- just as a TAC member, if there's any way to solve some of these legal issues, I think it would go a long ways to creating a very efficient, more robust process.

I think that's about all I have to say, but again, Dave, I thought you were spot-on.

MR. LAUER: Can I just say, thank you for that? And, you know, like I said, I have the advantage of kind of coming at this fresh and more from a technology perspective than a legal one, but I do know from what I've heard that the joint advisory committee was a very effective vehicle for working together. And I hope that might form the blueprint or the framework for, as you've said, Commissioner O'Malia, instead of it being an ad hoc thing and for crisis response, to being an ongoing effort, and that might be the right way to approach it.

MR. HERRADA: I wanted to add one more thing. Steve, it might be worthwhile -- Steve Reich, sorry, yes -- if you want to talk for just a minute quickly about the interaction between CFTC and FERC and how that's worked in the last couple months.

MR. REICH: Yeah, I guess this is since the last -- what is it? The end of March. We've been getting a regular data feed.

As you can see, it's not a large portion of what the CFTC has, but it's vital to us in terms of putting together our surveillance process. And it's essentially become a keystone in terms of what we've needed to be able to build out our surveillance process in kind of our little corner of the markets, which is much more limited than most of everyone is talking about here, but I think we're a lot more thorough because of it.

And I think Commissioner O'Malia and the Chairman and Jorge and John have been very helpful in working with us in getting something up and running. So now it's extremely smooth and useful.

COMMISSIONER O'MALIA: That's good to hear. Let me go back to the order: Marisol, Richard Gorelick, Pierre and then Brad Levy.

MS. COLLAZO: So thank you for facilitating this discussion.

I think the harmonization and the data

quality and completeness are key as a swap data repository, we've certainly been engaged with the Commission and with the industry.

I actually do have to compliment. I think we've had some meetings most recently where the Commission -- Jorge did some amazing presentations around data, and I think it does highlight a few things that we need to be thinking about.

What I would first start with -- it's not just the Commission's problem. It's not just the SDRs' problem. It's not just the industry's problem. You know, we have to have much more of a collaborative approach here, where there is a view of the data set and what are the challenges.

So, Mike, you asked the question, is it a data meaning problem? Is it a content -- you know, is it a format problem?

I actually think it's a combination of those things.

I think, one, we have to deal with the interpretations, and in some cases, interpretations vary.

An execution timestamp is a very good example, and I understand that's a high priority. We find edge cases or certain cases where you go, well, what do you do in these scenarios?

So how do we tackle that, collectively, between the industry, the SDRs and the Commission?

You know, the other is around the completeness of data, and those are more things that you can do around the validation, but again, it's easier said than done because you can always find examples of where those challenges exist.

So, you know, I guess my comments are really not to go into all the details that underline that, but there's really a few themes around it.

And what I think is important, and perhaps taking a page from the large trader reporting, is there was active engagement by the CFTC with the industry. I think it would go a long way to have that active engagement once again between the SDRs, the CFTC, as well as the industry, to go through those key data elements and understand.

And, again, you know, it's sort of the keep-it-simple principle. I'll save the last aspect.

But it's really about, you know, let's focus on a set of key fields. We've started with credit. We're looking at the harmonization fields there. Let's look at what other fields, engage the industry.

I mean, the industry is known to rise to the challenge where the data fields are understood as to where is it not going well, where are the issues occurring. If the analysis proves out some of those conditions, then you can actually start to get real engagement, understanding of meaning, right, so you have a clarity across the industry as to what the challenges are there.

Recognition of market structure. And I'm going to go back to market structure quite a bit in that these things just don't magically happen, right? It does take time for that meaning to translate into what is the right market structure that exists for making sure that data come through in a clean and accurate way.

And, with that, it's recognizing the process flow. I know that we have just sort of -- the Commission has received many responses on the concept paper regarding trade reporting, but I think process flow -- looking at cradle to grave, the audit trail.

And I think there's a key consideration that the Commission needs to give some thought to in terms of surveillance, bringing this back to the surveillance piece, which is there are two approaches of efficiency and cost.

One is if you deal with the process and the market structure, you can deal with the efficiency and cost from the perspective of, how is it that the SDRs are able to have that full audit trail for a trade ID from cradle to grave?

And if you focus on that objective, then what you're doing is you're really placing much more of that effort on the SDR itself.

So I would say look at -- when you're looking at the efficiencies, that's a particular area to look at balanced against the cost.

So -- I mean, I'll conclude there. And one other thing I would add is I think considering the work on the data standards is key because I would say another challenge is now with Europe we have a different version of trade IDs, and that just, again, kind of adds to the complexity of reporting from the market participants.

COMMISSIONER O'MALIA: Thank you, Marisol. I know we're a little over time, so I'm going to hit Richard, Pierre and Brad. I don't know if, Brad, you still want to make a comment. If you can just keep them tight here.

MR. GORELICK: Okay. Thank you. As Andrew mentioned and recapped, at previous meetings of this Technology Advisory Committee, the exchanges have detailed their extensive surveillance programs.

In the interest of time and cost, I would urge the Commission not to reinvent the wheel with redundant, built-from-scratch, in-house, you know, boil-the-ocean audit trail systems.

Instead, I would urge the Commission to work with the exchanges to figure out how to improve the Commission's access to the tools available at the exchanges today and the Commission's understanding of how they can be used.

One related topic that's been raised repeatedly is whether there should be a new registration requirement for high-frequency traders, presumably, in part, to help the Commission with its surveillance efforts. We've talked here at some length about the significant definitional challenges and the potential for that approach to create inconsistencies and loopholes.

My view has always been that surveillance should, instead, be broad-based and focused on questionable behaviors at any frequency.

We should ask simply -- and I think this

Committee is a good place to do that -- what specific information does the CFTC lack today that would be helpful to its surveillance programs?

I believe that most of the information that the CFTC requires is available to it today in current audit trails and in exchange membership files. If there are other types of information that would be helpful, let's figure out how best to get that information quickly and at a reasonable cost to the Commission.

It would be a shame for the Commission to spend several years and many millions of dollars to create a new regulatory framework and to build costly processes and systems when it could be appropriately surveilling the markets today with a better understanding of the tools already available.

Thank you.

MR. LAMY: Thank you. I will be brief. When I look at this slide from Jorge, which is very interesting -- thank you -- the question that comes to mind is, do you have all the information that you need because you are collecting a lot of information?

But the key question, seems to me, is, are you missing data points, or is the only issue harmonization of the data and having the tools to analyze the data?

Are you collecting all the data that you need? That's question one. The second question, which still relates also to the question of what do you need exactly, is on the CDS activity, which has been just looking at these data for quite some time, and it seems to be focused on meaning.

Could it be that it might be useful to engage market participants in terms of what do you need exactly?

And then market participants would be able to work together to say, well, based on what you need exactly, this is the set of data and depending on the use cases in which we could provide you the exact data points that you need because there could have been in the past some ambiguity in terms of I need the data points.

But if you're not crystal clear as to what the need exactly is, it could be that there could have been a different interpretation as to what should have been provided.

MR. HERRADA: Great. I think you've raised two good points, Pierre.

I mean, do we have all the data we need? We have a lot of the data we need, but we

certainly need more. I mean, we have talked about the fact that we don't ingest the message data currently.

And I would venture to say that you've sort of nailed it on the second point, which is to say, we're in the infancy of the swaps data. We're pulling it in, and we still have harmonization issues. So I think that that's an area where there's a lot of growth in terms of data that we need to pull in.

And I completely -- this is my opinion, certainly not the CFTC's opinion. So I'm just speaking for myself, but I'd say, yeah, absolutely, industry engagement is critical.

I mean, you guys live and breathe this stuff, and we can -- you know, a collaborative thing will certainly benefit with that.

So I like where you're going with that.

MR. LEVY: Sure. Thank you. So there's been a lot of talk of chasing what is really the Holy Grail, which is cross-asset global and cleanly linked to a global LEI. That is the perfect.

And the reality is the perfect is definitely getting in the way of the good.

We ourselves have done a bunch of analysis, number one, because we run a risk platform, but we've also just done some generic analysis on the systemic risk side and built some tools around that.

So our view would be -- and this is where I think the false positive issue can turn into a net positive, which is start to impose that on people. Use the data you have. Go out there. Don't arrest, sanction, you know, really go after people, but start to try to use the data. That will be a very effective, self-cleansing.

When you start to talk to people about the limited data that you have as one regulator -- the OFR is clearly, at least for me, the entity that is designed to be the systemic regulator above it all.

But in terms of surveillance, et cetera, just start to use it. People will push back. They'll say you don't have the right information. And then, over time, the data will become self-cleansing instead of solving for edge cases and perfect harmonization and standardization.

The reality was in '08 we didn't miss the edge case; we didn't miss the tail. We missed the whole body.

And that's pretty much, at least for me, what we should be solving for, and then over time you can solve for all those other cases.

But if we're trying to solve for '08, we're currently solving for something quite different than '08.

COMMISSIONER O'MALIA: Any other final

words on this?

(No response.)

COMMISSIONER O'MALIA: I just want to let everybody know that around the technology and the integration and the data questions I think this is the beginning of a debate, an important debate, for the Commission to think about where we're going to go and how we should think about integrating with other regulators.

And to continue this debate, we're going to set up a web site within the TAC web site on CFTC.gov. Go to the TAC page. There will be a new link starting today, or I think it's already up there.

Then we're going to take comments. And anybody, any vendor, any technology expert, any data expert that has an idea about how we should solve this problem, dump it in there.

It's going to be dumped in with everybody else. So don't put anything proprietary in there.

But, you know, give us something to work with. We'll share it, try to share it among the Commissioners and certainly share it within the Commission and see if we can work with something there.

We have -- and I receive on a regular basis -- many, many good ideas, and I'm just not in a position as one commissioner to necessarily adopt it and sign a contract, et cetera. But I think it's one of these things that today's debate really kicks off the exercise that we can think about:

What's possible? What do we need to think about? What are our priorities? How much should it cost? Where should we go? Who's got the expertise? And so, for the next 60 days, we're going to leave that web site up there. And if we get any hits and some information, go ahead, dump it in there.

We'll see what we can work with. We'll work with all the divisions to see if there's any interest in it, but hopefully, we'll get some leads on that.

So let's take a 15-minute break and get back here at about a quarter of 2:00 and take on Panel III.

(Recess)

COMMISSIONER O'MALIA: Okay, Panel III. We're looking at the SEF data and seeing where we are to date in terms of SEF trading and what it's going to take to get a little more buy side participation and, frankly, greater participation at all levels on swap execution facilities.

And, to kick us off, we have an overview from Clarus Technology. Tod Skarecky, Senior Vice President of the Americas, is going to provide some background on what Clarus has put together in terms of looking at SEF data, using the real-time data -- Part 43 data.

And it's been interesting to follow kind of their blog, which they do a tremendous amount of work on, and it almost seems to be crowd-sourced.

And I know they're not the only people who do it. FIA is doing it and ISDA is doing it.

But it's been interesting to read some of these blogs as they tackle some of the issues with data quality, with data integration, cross-market checking, trading on SEFs, et cetera.

So I suspect we're going to see the refined research, such as it is, but it is an interesting process as everybody wrestles with the real-time data to define trends and to see participation and look at who's trading.

I'm very sympathetic to data quality issues and the challenges they have, and I enjoy kind of learning about it as they learn about it, first-hand.

So, Tod, why don't you lead us off with your slides?

MR. SKARECKY: Thanks, Commissioner. So, again, I'll begin. I'll look at -- again, this is the public data.

This is the data that everyone out there has access to go look at. We have no privilege to go look at Part 45 or more private data.

So who am I, and what's my firm? One

slide just so you can place who we are, right.

So we're a couple years' old firm. We're 100 percent employee-owned and employee-funded, and we're delivering technology in the space of SDRs and SEFs.

Importantly, being employee-funded, we began off with a services arm and did some consulting. The goal of our firm is to provide some cloud-based, credit risk, market risk technology, but in the past two years we end up having this world of data fall in our laps, right -- this world of public data.

And so we began publishing, like the Commissioner said, some blogs but also a product that then aggregates and simplifies some of the collection and presentation of the public data. So that's what we're going to focus on today and why I'm here.

So, Data 101. This is the basics, guys, right? There's the world of the swap market, right -- the big pie out there. And then, importantly -- and this does get confused by some people I speak to, but then there's a smaller oval, if you will, in this case, an orange oval, which represents what's reported to the SDRs in America, right.

So trade repositories across the world might be getting some of the rest of that pie, but certainly within America, everything is being reported through that sort of orange circle. And then, importantly, a subset of that, of course, is then SEF data -- what is transacted on SEF.

So what are we looking at when we look at the data?

So what's available is Part 43 data. That's the publically disseminated SDR data, and that's from the four usual suspects that we're collecting from.

And then there's the equivalent sort of Part 16, publically available Part 16 data for SEFs, which are coming from, arguably, 24 different SEFs. Of those 24 that have registered, 22 have been approved, and as many of you know, 16 SEFs have actually done any activity, right, and produced actual reports.

So it's these sort of 20 different sources of data that we're getting the information from.

And then -- you know, so what's the difference between these two data sources, right?

So the SDR is trade-level data whereas the SEF data we're collecting from SEFs tends to be position-based.

The frequency of the data for SDR is intraday. You'll see it -- you can do a trade, and you'll see it pop up on a screen a minute later, whereas SEF data is end-of-day.

The format of the SDR data, you know, varying between DTTC, Bloomberg and the others -- it's more or less common. I've called it somewhat common. Whereas, the SEF data -- there's 24 SEFs, 24 formats.

One of the things that people like to look at the SEF data for, however, is that you can see full transparency into the size, right. So you get the full notionals being revealed whereas on the SDR you see a lot of capped transactions, which is an attribute of a block trade.

And you can, of course, see what people want to see, which is what SEF isn't on. The public data for Part 43 does not tell you what is SEF. Okay. And there are other things people want to see.

They want to see: Is it a dealer or client trade? Is it the dealer paying or receiving, much like you might see on TRACE?

Then also people want to see: Is that part of a package?

So, without tricks, you really can't get to this information right now on the public data.

So then let's jump into the data. So what does this tell us, right?

For credit, first, we'll look at one of the MAT products. You know, credit is generally a happy story. We're looking here at the IG Index which began, on the very far left, in October.

The SEF participation, if you will, or percent of on-SEF trading is that green line that you see began right about, I'm going to say, 40 percent dip-down, and now it stands at about 80 to probably 85 percent.

In term of trades, it's much the same. I think that began at about 50 percent, and I think that's now at 88 percent, for just this one index.

This is a MAT-able product, and you can see the sizes and the trade counts there as well.

So that's a general positive story. And if we -- I won't bore you with the other details of the other sort of MAT-able trades, but if you do look at those, this is a summary of those, right. They're all -- you know, both IG, the iTRAXX series, they're all that similar kind of up slope.

I guess the important question is then, well, hold on; even if it is only 12 percent that's off-SEF, what is it, right?

So we look at that sort of tail. So that big blue bar, if you will, that you're looking at in Number of Trades, the big blue bar is on. Everything out to the right is off.

I break it down there. We look at -- you know, some of this is block. Some of it is not five-year. Some of it is not on-the-run or the most recent on-the-run, right. So, if you go down that list of criteria of what is MAT-able, those 12 percent demonstrate at least 1 of those criteria.

So, in that order, we can see that most of them are block-size trades.

And, quite frankly, there's stuff you can't explain, right. And that just, from the public data, might easily be packages, right, exemptions, things of that nature.

FX -- one slide here, just because it's worthy to mention that this is not a required trade. It is permitted, obviously. It's available to be cleared but not mandatory cleared.

And you can see just disparate results on SEF, right. If you look at the Peruvian currency, that NDF is very, very high on the ranking of percentage on SEF whereas dollar-mex is at the very bottom, right.

I'm not going to offer any explanations for this, but I thought just in the context of presenting credit and interest rates I thought it would be worth it to put that up.

So moving on to rates, which is what I think is more interesting -- you know.

So we'll look at, first, the U.S. dollar. This is, again, the same kind of chart we looked at with credit.

And here the sort of up trend is a bit more gradual, but this began a bit higher; it began about a 40 percent adoption rate in terms of trades. And it's slowly grown now to -- I think the number we're going to look at is about 52 percent of all fixed-float swaps in U.S. dollars are traded on SEF.

Looking at a similar profile for euros, I'm not going to offer the explanation, but I think many people could probably guess why that's significantly lower.

Sterling, of course, trending much lower as well. And, out of curiosity, I found yen to be interesting at a fairly decent percentage, 45 percent or so. So there are the general trends, dollar being that blue line on the top left and the bottom right, you know, hovering around 50 percent now.

It's the same question we looked at for credit. What is that remaining bit, and why isn't that on SEF, right?

So the color scheme here is the same, right. On SEF, is blue.

And we're looking at, well, what are those MAT-able characteristics, right, that these trades fail to meet, or why aren't these on?

I mean, you can still put permitted trades on. And we quickly find out that there's a good chunk that is uncleared. There's a good chunk that is not MAT-able index. It might be one-month LIBOR, right, or non-MAT-able tenor; it might be a forward-start. So that explains a great portion of this.

However, as I say here, it depends how

you peel the onion, right. So it depends what you look at first because, again, the off-SEF trades demonstrate many of these characteristics.

So, if we instead look at the first attribute being what is a non-MAT-able start date, so what are the forwards, if you will, right, it turns out then, if I'm using my mouse now, this big red bar, right, demonstrates the forward-start portion of the universe of dollar fixed-float swaps. And what we find is that accounts for, of course, a drastic portion of what remains off-SEF.

So on to, I guess, sort of the question, and I have two anecdotes that I'll wrap up with, right.

So, the question being talking about buy side participation, the first anecdote is that firms are avoiding SEFs by changing the dates on trades, whether they be changing the forward-start, doing some kind of change in the maturity -- 30-year in 1-day swap, right. So is that backed up by the data?

Again, I refer back to this list of sort of MAT-able characteristics of swaps, and I look at the trend from October to May.

In the very first line, we look at, what is a forward? We know that in May 2014 72 percent of the off-SEF trades were forward-start. In October, that was 54 percent. So there has been an increase, right.

And you can see the change in non-MAT-able tenors, right. So that could be a 30-year in 1-day, right, arguably.

And, again, a trade can demonstrate one of each of these characteristics. It can be a block, uncleared, 3-day forward-starting, 9 and a half year swap, right, which is why those don't add up to zero.

But it is interesting to see that a large percent of it is forward-start.

So, quickly, I guess the answer would be there is an uptick. There is a change or an increase in forward-starting swaps. However, we have to realize that that percentage is against a denominator, a denominator being the world of off-SEF, that is shrinking, right.

I will tell you that in actual terms of trades the number is increasing. There are, in fact, more. We're observing more forward-starts occurring, not to accuse anyone because the final point here is we don't know if this is even client trades.

This is, again, the universe of trades on SEF, or in this case, off-SEF, that we're looking at. And so we don't have that transparency into dealer or client, but it seems to support some evidence of that.

The other anecdote is that only 10 percent of the market was client activity. Only 10 percent of the clients, rather, were trading on SEF as recent as January. And I've heard 10, 15, 20, all about that sort of January/February timeframe.

And, again, so I guess the question being, what can we support by looking at the SEF data?

So now we're turning over to SEF data,

in particular, like pure sort of by individual SEF name and looking first at credit. The chart on the top left, if you want to look at that, that's by individual SEF. And the bottom right is the more interesting as far as dealer/client assumption.

Now, granted, we have open access, or it's certainly law that SEFs have to let everyone in.

I'm pretty comfortable with the assumption still, probably for the small time longer, that you can assume that the Bloombergs of the world are client SEFs and that the IDBs are dealers. So this is what I was referring to on one of the first slides -- is that you can start to make assumptions with some of this data.

And, if you do assume that the client SEFs are client activity and the dealer SEFs are dealer activity, you get this pretty good chart, right. You can pretty much see that there has been a very good up trend in adoption of credit on SEFs.

Doing the same analysis for rates, the picture is inverted as far as the percentage of what's being done by dealer and client, but the trend is still apparent by looking at down below you can see that the blue bar is being how much was dealt on client SEFs. So that equates to really about a four or five-time multiple increase in client SEF adoption.

I want to pass it on to the panel, but just in summary, right, there's good adoption for credit. That's a very securitized market. I don't think anyone is too surprised to see that.

NDF is showing some high on-SEF rates, but it's a permitted trade at the moment.

And interest rate, likewise, is showing -- it is showing an increase of buy side participation.

However, when you look at what is off, we're noting that there's a vast amount of forward-start trades, and quite frankly, that sort of magnitude of forward-start swaps is just an attribute of the market at large that is here and always has been part of the market.

So, with that.

COMMISSIONER O'MALIA: Thank you, Tod. I'll go to Wendy Yun with Goldman Sachs Asset Management.

MS. YUN: Thanks, Commissioner O'Malia. First, I'd like to thank the Commission and the Committee today for allowing us to participate in today's discussions regarding SEFs.

This is obviously a very important topic for the buy side not only because of how the rules have changed how we've historically traded swaps but, also, the overarching impact on market structures, pricing and liquidity generally.

While we generally support the statutory principles of pre-trade price transparency and improving market efficiencies such as through trading through SEFs, we are concerned how these goals will be met given the compressed timelines for implementation and some of the regulatory uncertainties.

From our perspective and speaking with

many of our peers, we think that there are about four or five different high-level concerns or threshold issues about SEF trading.

One is the SEF readiness. It is not enough for a SEF to be able just to list a product, but also, it needs to consider whether or not it can actually support the needs of all of its market participants.

And what I mean by that is, from the asset manager perspective, we need to make sure that there's a seamless integration to our order management systems so that we can get our trades into the systems in a very systematic and efficient manner.

It is not a viable solution for us, and we don't believe a SEF is ready when they're asking our traders to manually input trade and allocation details of bunched orders throughout the day. That can cause additional latency as well as potentially heighten exposures to trade errors.

Also, the SEFs have to take into account whether or not the dealer participants on their system can actually code to and support providing automated pricing for the products that they're offering. We found with some of the packaged products that have already taken effect that there were very limited dealers who were willing to provide pricing not because they were not willing to but because of the gateways and the interface that they had to the systems to provide such pricing had not been fully developed.

The second issue that we are concerned with are costs associated with trading or participating in SEFs. Obviously, there are time and resources dedicated to negotiating rulebooks, to having to comply, potentially, with the oral and written record-keeping requirements of 1.35, as well the technology build and infrastructure to support monitoring and the connectivity necessary to be able to effectuate the SEF trades.

The third, I would say, is the need for global harmonization and regulatory certainty. Many of us are still trading on behalf of global client portfolios. So we have different client bases.

We would not want to be in a situation where we'd be forced to actually have to bifurcate our trades to multiple venues and to split up our trading practices for different types of clients based on their domicile and to access different pools of liquidity.

It's also important as we also have funds that may be domiciled in Europe and subject to being financial counterparties and subject to the rules of EMIR for clearing and execution but, also, based on their principal place of business are U.S. persons and, therefore, subject to the rules under Dodd-Frank.

Fourth would be our concerns about general fragmentation of liquidity and market dislocations that may result as a result of the uncertainties that lie with respect to the global harmonization, some of the interpretive questions about the SEF rules and the implementation requirements.

And we would urge that the CFTC consider all of these different concerns in how they are implementing the rules to date as it relates to SEF trading. Taken as a whole, all of these concerns can have a chilling effect of market participants from embracing the willingness to trade on SEFs.

Thank you.

COMMISSIONER O'MALIA: Thank you. Michael?

MR. O'BRIEN: Thank you. My name is Michael O'Brien. I'm the Director of Global Trading at Eaton Vance. Eaton Vance is an asset manager based in Boston with about $300 billion in assets under management.

As far as the question of why isn't there more buy side participation on SEFs, I mean, I certainly agree with the four points that Wendy made, and I'd also add a few additional ones.

The building of SEFs wasn't for the buy side. You know, if you build it, they will come.

It was, and it still is, if you build it and it's cost-effective and it's efficient to use, then they will come. We're in the business of investing our clients' money, and so we're looking for the most cost-effective way to implement our trades. And, to the extent that SEFs fit that definition, that's where the buy side participation will be.

Now I'm going to go into a few reasons, at least from our perspective, why there hasn't been more buy side activity on SEFs, but at least part of it is the buy side doesn't adopt anything immediately. Nothing happens overnight. There's a lot of changes that need to be made internally that don't happen quickly. So I think to a large extent a slow pickup in SEF trading, even in an ideal world, is to be expected.

Just for a little history of what -- of how we've approached the SEF trading and the mandates. Before October 2nd, in many of the MAT-ted or now MAT-ted products, we were nearly 100 percent electronic execution. So interest rate swaps, to the extent we could do NDFs even though they don't have a MAT yet, and CDX -- you know, primarily, we were trading those electronically.

On October 2nd, once these rules came in and we became uncomfortable with the rulebooks and Rule 1.35 and a few others, we stopped trading electronically basically because we couldn't. We could no longer trade on these SEFs. So everything went back to the phone.

Now our planned approach was as the MAT came on February 18th that we would be a participant on, say, 3 to 5 different SEFs, we would have everything ready to go and, in addition -- and I think this is an important point -- using an aggregator, which I'll get into detail in a minute.

So our plan was I can't connect to 17 SEFs. It's either 21, 24 that were mentioned, whatever the right number is. It's too expensive, both in terms of explicit costs as well as resources within the firm and the opportunity cost of those resources.

So I had a guess of where I thought the right three to five to pick were, and using an introducing broker or an aggregator -- I kind of use those terms interchangeably for this purpose -- that would pick up the slack. If I made the wrong decision, if I picked the wrong SEF, if liquidity wound up somewhere else, I would use that introducing broker model to allow me access to the market while I either decided to join those SEFs or move on.

The current approach I have is that we haven't signed a single rulebook and have no plans to do so in the immediate future. What we are doing is using an introducing broker, and so all of the trades we've done to date have been through an introducing broker to keep us, at least we believe, out of compliance risks associated with the rulebooks.

The reason that we've gone this way -- there are really, I think, four reasons, the first one being the rulebooks.

The issue with the rulebooks and signing them -- I mean, one, it's a challenge just to read the rulebooks and understand what they are and match the rulebooks we're most comfortable with, with where we think the liquidity is going to be in a given asset.

The other challenge is this has never really been designed on a buy side firm. Certainly, internally, for us, we don't have policies and procedures; we don't have the right approvals; we haven't had conversations with our clients, to become a direct participant.

In the equity market and in the future markets, especially, we're not direct participants. We use an introducing broker. That's the way our policies and procedures have been designed.

It would be a very large undertaking to change all of that, to become a direct participant on a SEF. You know, it's not even clear exactly what we would have to do. We would just have to start a project to figure out what we wanted to do.

Given the uncertainty associated with the rulebooks, with their changing rapidly, we view -- certainly with all the conversations that we're having here on various topics -- that there is regulatory uncertainty for us. Again, this is not our primary business line. We can't devote all of our resources to this. So we feel the best way is to avoid the rulebooks for now and not become a direct participant on SEFs.

The second issue is Rule 1.35. While we believe what we are doing is certainly in the spirit of 1.35, I don't know for certain and I don't have -- again, I would have to build out the resources and the procedures and make sure everything was in place to satisfy the requirements. I'm not able to do that right now until I have more certainty on what that rule means. So, again, that would suggest move away from the SEFs and use the introducing broker model.

And the third is cost. As I mentioned with both of these things, it's very expensive to change these things. We don't know where the markets are going to be in a year or two years, or if we're going to have to reinvest more money if something changes. So it's not an efficient use of our resources right now to delve into this.

And the third is the alternatives available, and I think we saw that in some of the data that Tod presented. Especially in rates, there are a lot of alternatives, many of them CFTC-regulated in the futures market that can get us the exposure we need without trading on SEFs.

When I go to trade on a SEF, I need to make sure that I have in place -- I have the SEF and the clearinghouse and the introducing broker and perhaps some middleware, maybe a standby FCM, a final FCM. There are a lot of moving pieces. And it's also something I don't have a long history in dealing with.

In the futures market, we have far fewer entities to face. We have established methods of trading. We're comfortable with the compliance and regulatory issues around these products, and they're a lot cheaper to trade.

So I think that it's very telling in the data. I think I wrote down that around 50 percent of rates trades, I think Tod mentioned, were on SEF whereas 80 to 90 percent of credit. And I think a big part of that can be explained by there are more alternatives in the rates market to trade off-SEF than there are in a credit market.

And so, for the variety of reasons we've mentioned, I don't think that -- you know, where there are more alternatives, it would make sense that there would be equal trading on SEFs.

The solutions for us in order to get more comfortable, enough to participate directly on SEFs, would be clarification of Rule 1.35, or perhaps even limiting how it impacts asset managers, and certainly encouraging the introducing broker model.

I mean, that is something that most buy side firms are using in the futures market, and I think also makes a lot of sense to use in the SEF market, and I think a lot of buy side firms are starting to come to that realization.

In terms of what to do next, the one thing I would say is there are a lot of issues that have been discussed throughout the day, including on this panel, on SEFs and what the future of SEFs should be.

I don't think -- and NDFs have come up, and I think it's very telling that only 1 percent of that market has gone to SEF.

I don't think NDFs are a very different market, and they're not the same as rates; they're not the same as credit. There are a lot of issues to work out.

I would suggest we shouldn't rush into moving SEFs into a world where -- or, moving NDFs into a world where they have a MAT until we resolve a lot of these issues and see some of this participation from the buy side pick up.

Thank you.

COMMISSIONER O'MALIA: Thank you very much. Our final witness for today, Mr. Fitzpatrick.

MR. FITZPATRICK: Thank you, Commissioner O'Malia, again, for the opportunity to represent the WMBA here.

My name is Scott Fitzpatrick. I'm Chairman of the Wholesale Market Brokers Association and Executive Director at Tradition.

Tradition is one of the number of registered SEFs these days, as are my colleagues in the WMBA. We were historically, as you would recognize us as, IDB SEF.

Sorry. I've been told to speak up. We've just heard from Wendy and Michael a perspective from the buy side and their uptake, or their interest, in executing onto SEFs. I'll probably just take a view from the other side of the fence, if you like.

Up until February the 15th, I guess, which was a key date for SEFs, well, that was in effect the first date when you had mandated execution on platforms that we have built.

Michael made a great point, which is the build it and they shall come theory.

We have, and if we're having a conversation specifically about buy side interaction on the liquidity pools, they haven't. I think that really probably shouldn't be any surprise to anyone in this room, quite frankly.

We entered the land of the SEF in October of last year. There was a huge amount of lift in terms of technology and infrastructure, corporate governance, capitalization, resourcing, just to get to the point where you were not a SEF to the point where you were a SEF.

Naturally, I think over the first few months of the introduction of SEFs, what you've seen is, both in terms of participation, people focus on their incumbent suppliers of services, familiarizing themselves with rulebooks that they were introduced to around October time.

I think it was a gentleman from Barclays at one of the TAC meetings, who sat right about here with a stack of paper about 8 inches high, which represented at that time, I think, the 19 SEF rulebooks that they had to consider as an FCM for providing risk-based limits for client trading on SEFs.

I think also, you know, from our side -- and we have -- I mean, you can read our rulebooks on the various web sites.

In terms of the infrastructure that we've now established and set up we are fully capable now of operating on a number of access models, whether it's direct access as a participant on our SEF or, as Michael, in the model that they've chosen to go with, which is not to actually become a member or a participant on the SEF but, in fact, to come in through the introducing broker or sponsor of access or agency access or any number of the variations of the description that kind of do the rounds these days. And everyone has got their own opinion on exactly what each of those mean.

The establishment of that infrastructure -- and let's just talk about onboarding for a second because the theory that you can read a rulebook, sign off on a rulebook, fill in all the representations that you need to fill in to be a part of a SEF these days, whether you're an ECP or a MSP or a swap dealer, and be appropriately signed off and papered by the SEF that you want access to doesn't, by any stretch of the imagination, mean that at that point you are ready to conduct active business on that SEF.

From our side, we have infrastructure that has to be in place. We've got FCM relationships. There's an infrastructure requirement from, you know, whether it's GSAM or Eaton Vance, between them and their IB. There's infrastructure between us and the IB.

The IBs that Michael was talking about are choosing to act as effective aggregators of the SEF community. They all take liquidity from various SEFs. They'll represent that to their clients either in a truly aggregated model or just a pick-and-choose model. And then those clients, in theory, will be able to transact through those networks and execute directly onto the SEF behind the price.

The infrastructure that has to exist between us and the SEF community and the IB at that point needs to be established.

You then have the credit hubs and the FCMs. The FCMs have got to get comfortable with risk-based limits on each of the platforms so that we can do our pre-trade credit checks prior to execution.

We are in certification process with the likes of Traiana and Markit, but that infrastructure is not quite there from a push perspective into central limit order books.

And then the final point I would make is that there's a sense of -- I mean, I don't know whether it's just because there are 10 or 15 or 20 SEFs to choose from in the market that people are going to naturally want to go to every one of those because there's liquidity that exists in every one of those SEFs.

SEF liquidity pools are very, very different in nature. I mean, those guys around the table, whether it's Tradeweb or whether it's

Bloomberg or whether it's Tradition or whether it's ICAP or whether truEX -- each of those SEFs represent very different styles of liquidity and very different representation by the dealers into those markets and by the participants on those markets.

And there's an economic analysis that has to be done by the individuals that want to come into those liquidity pools as to whether they actually want to be there, and they have a right to choose.

We make ourselves available, and we have built it, and hopefully, one day, they will come because it's not been cheap.

On that note, I will pass back to you, Commissioner, and look forward to the debate.

COMMISSIONER O'MALIA: Thank you. I'd like to open it up for any questions or debate or concerns about any of this and thoughts you may have. We have Mr. Olesky that runs a --

MR. OLESKY: Thank you, Commissioner. Yeah, well, I think each of the panelists contributed very relevant information. In our experience, Tradeweb is somewhat of a unique animal in that we've got two different perspectives on SEF. We have one SEF that we call DW SEF and one SEF that we call TW SEF, and they each focus on different client segments.

So the DW SEF is an anonymous order book that is largely inter-dealer in nature, where not knowing who your counterparty is irrelevant; it doesn't matter.

TW SEF focuses on a disclosed model. And the reason I'm hitting these two differences is we're talking about a wide universe of clients that are participants in these markets, and I don't think it's surprising that it's taking this much time for people to adjust to this.

Our own experience was a year ago, over a year ago, we had much more volume than we did pre-February launch. So we actually were up here in the volume, and as we got closer to the SEF date we all took a significant dip in terms of activity as people were preparing for the live dates.

What we've seen in the last few months and even in the last few weeks is a slow increase, a steady but significant increase, so that if I look at our volumes today they're actually significantly higher than a year ago.

So I think we're heading in the right direction, but this is a very complex ecosystem with a lot of technology issues.

I think Wendy hit on a significant point, which is integration.

I mean, it's easy to say we're going to build a SEF, but there's a lot that goes into connecting up the trader with just the matching engine that is a SEF. There's a lot of integration. There are credit checks. There's hitting risk systems. And you can't just have people willy-nilly sort of entering things in separately.

So integration is a massive undertaking which we've been spending a tremendous amount of time on for years and years, and we literally have hundreds of integrations with different customers.

But each customer does not have the same amount of resources to apply to integration. They don't have the same amount of resources to apply to assessing rulebooks. So this is a continuum in the marketplace of the amount of effort and capital that firms can invest in adapting to this, and it's going to take time to see it through.

But I think it's heading in the right direction, but look, we still have many rules that are being phased in, in the coming months, you know, whether it's the package trades that aren't complete until November. We still have another date coming up with switches in June, which should likely trigger more activity.

So, as we get through this process of adjusting to the rules and the rules become finalized across the board, I expect we'll continue to see more and more volume.

But I don't think it's any one thing. I think it's -- and it's challenging as someone who is running an electronic operation. You can become impatient with the speed with which things are working, but I think we have to be patient, and we have to get through these rules as quickly as possible in terms of their implementation.

COMMISSIONER O'MALIA: Can you touch on kind of the status of the package trades?

You mentioned that you're going to see volumes going up, but is that going as smoothly with the phasing as you had hoped?

MR. OLESKY: Yeah.

COMMISSIONER O'MALIA: Maybe the buy side could also --

MR. OLESKY: Well, I think Wendy mentioned this. Package trades is not just a technology solution that needs to be delivered by the SEF. It needs to be delivered by the participants that are providing liquidity. So you have to be able to generate prices across multiple instruments very, very quickly.

Now that's not something that everybody has right away. So that's being phased in, and there's different capability among different firms.

The other thing is there are still some significant packages that are not yet required to be traded on SEFs, and that's happening in the coming weeks, I guess, and months -- two weeks.

COMMISSIONER O'MALIA: Wendy.

MS. YUN: I would add that on May 15th we tried doing a MAT-to-MAT swap on a large SEF, and there was only one liquidity provider available on the system.

So those are some of the challenges that you are confronted with when the systems are not fully baked and people have not had a proper amount of time to actually build towards connectivity and providing liquidity.

COMMISSIONER O'MALIA: Nick, do you have a --

MR. SOLINGER: Thanks, Scott. I wanted to share some statistics from our view.

I think as many of you know, we operate on behalf of the FCMs and a large number of buy side firms as the pre-trade credit check and compliance tool.

Agree with what Wendy and Michael have shared and also similar experience, Tod, as you've shared, in the data.

Just north of 600 firms have been set up to trade on SEF in our utility, and those firms obviously manage thousands of funds. Most of those firms have two to three FCMs and are set up to trade on two or three SEFs. Less than 50 percent of those firms have executed a single trade on a SEF since the MAT dates, and of those that have, very few of them are trading regularly in SEF.

So, at the end of the tail, they set up ceremonial trade and gone back and looked to other markets because of all the technical issues on the end-to-end flow.

And I think the package trade rollout is a good example, where the industry was fairly transparent in the fact that the end-to-end flow from liquidity provision down through SDRs and CCPs did not yet support, technically, a robust process for handing packages. They've rolled out in advance of that, and the results are as testified to here.

So I think the buy side is still very much getting used to new processes, but some of the new processes don't exist yet, especially when you get down to some of the more complex products.

MR. FITZPATRICK: I don't know whether there are any representatives from FCMs in the room as well, but I think one of the things that -- certainly, from my experience recently, one of the things that industry is struggling with is, where is the allocation and management of credit across potentially multiple SEFs all executing the same products, and not necessarily the distribution of the risk-based limits but how the limits are consumed on individual SEFs, what happens to cancelled trades, error trade policies?

And these are all things that factor into the allocation and distribution of liquidity across a number of SEFs.

Obviously, firms like Traiana will act

as a sort of centralization point for a lot of that, but there's still a complex model there to be understood.

MR. LEVY: Yeah, just to continue on Nick's point, we sit in the middle of a number of these flows. We're in the pre-trade credit space, as Scott alluded to, as well as connecting up to SDRs and CCPs.

Packages are one item that's coming down the pike. There's bunched. There's allocations. There's a lot of incremental features -- workflow, systems changes.

At least, we have definitely learned by being in this space for some time that really nothing happens in months. At best, it takes a year, and it usually takes a couple of years to get these things right.

It's not surprising to us at all that there wasn't some sort of cliff event in terms of business moving. If people didn't have to, they wouldn't, and if people couldn't, they wouldn't.

And they're looking to alternatives,

whether it's alternative markets like the futures markets, maybe not permanently, in the interim. I think that will be somewhat based on how quickly the industry can adjust. Hopefully, it's not years away, but it certainly doesn't seem like months away.

The packages are coming fast and furious between June and November -- our estimation based on sitting in the middle of those flows, not just what we need to do but what the CCPs need to do to adjust the SDRs.

Ultimately, the world looks at trades as single trades that are strung together from a trading strategy but not strung together operationally, either pre-trade or post-trade or anything in between.

So we're acknowledging, at least from our perspective, that it is early in terms of the push to require it. It is a page from what I described before, which is push early and then be sympathetic to the problems when they occur because they will occur.

And that's at least a way to get there a bit sooner than if you waited for everybody to be completely ready for the flows, including platforms like ourselves that are not any of the SDRs, the CCPs, the SEFs themselves, but sit in the middle of a lot of those marketplaces and functionalities from a technology perspective.

The other thing that will happen -- the buy side, you know, does talk about the fact that they don't have the resources and it is a challenge.

I think the banks, typically, who have been more flush, historically -- I'm not sure they are long resources either these days.

The reality is there will be a lot of technology firms that come in and fill those voids that are already out there. If they're integration firms or connectivity providers, they're already out there. They tend to be focused in some of the OTC markets but largely away.

And we'll start to see some of those

companies provide services in the seams when any individual firm can't possibly do it on their own. But if one provider could provide the service to 10, 50, 100 or 1,000 entities, it starts to present some scale.

But, again, those just take time to develop. Business models are created on the back of that.

And the solutions will be there. They just won't be there and feel very good in 2014 in our estimation, and in '15 the light will start to come out, and by '16 it will start to normalize a bit.

MR. MCGONAGLE: I think from my perspective in working with the Division, one of the -- you know, what we've been focused on, recognizing we have this mandate in front of us with the made-available-to-trade products, that they're supposed to be required to be traded on the facility.

But we've been looking at the fact that how the executions have been going, and for me, that has been a driver about determining the timelines, where we've had some flexibility with respect to these packages that we know and we see that these SEFs are able to execute these transactions and that, operationally, these things -- you know, trading can happen, and it is happening on the facility.

So I don't want to pull away from that momentum by being overly concerned about how other technologies that I know are in play will catch up. I know they're going to catch up because they need to catch up.

We're keeping an eye on the trading activity, and we're concerned that that activity occurs without incident. As people trade, are required to trade, or organically will want to trade on these products, on these platforms, that will decide sort of the success of this whole regulatory structure.

And so that's at least my vantage point in sort of picking these dates, looking at where can we get liquidity -- where is the liquidity in this market?

You know, June 15 is a big date, and I'm very focused on what happens on June 15. And I expect, just like on February 14 and just like before May 1, I'm going to get some letters from very concerned market participants about whether and what we should be doing, and I'm going to be getting comfort from other market participants that say, you know, stay the course; we need to work through this time.

And we're working through this time, and I think in a very effective way.

COMMISSIONER O'MALIA: Ed.

MR. DASSO: Thanks, Scott. So my name is Ed Dasso. I work at NFA, and one of the services that we provide is outsourced trade practice market surveillance to both DCMs and SEFs. We currently have 17 of the 24 SEFs under contract.

I think the point that one of the things that we have the ability to do that maybe, say, the SDRs don't have is we track every execution by type. What I mean by that is we know when the transaction occurs in the CLOB, when it's electronic or RFQ, when it's a voice RFQ, auction, any type of block, any type of execution method.

The trend, I think, that we've seen is obviously a gravitation more towards the central limit order book on the swap execution facilities that have liquidity.

When we initially scaled this program, we had anticipated up to about 150 million messages a day, and we're not there yet.

I would say back in October up through February we probably saw almost a 2:1 ratio as far as executions to trades -- so anywhere from, say, 4,000 trades a day to 8,000 total messages.

Well, as of last week, we saw about 45 million messages across the SEFs that we have under contract. So there's healthy participation that we're starting to see or gravitation towards a CLOB.

And Wendy had mentioned, you know, the quoting and the difference MAT-to-MAT strategies.

That is definitely something that we've seen much more automation in the marketplace.

Of course, there could be more. So I think the anticipation here is over the next couple months we'll see more participants join the SEFs and start auto-quote as well.

MR. LEWIS: A couple questions and maybe a suggestion.

The data that were presented by Clarus -- very interesting.

I assume that within the Commission you get similar regular updates. It sort of links back to the other topic about terabytes and megabytes and thousands of FTEs and what not.

But, if you don't, that's really scary. And I think that the NFA data that were just referred to, I think the Commission would do a huge service if -- you know, this was what -- one of the Harvard adages was "Plagiarize, plagiarize, let no one thoughts evade your eyes."

It's also called -- cutting and pasting is much easier these days in an electronic venue.

And I think disseminating the progress or the lack of progress, in terms of uptake in these markets, would do a big service in terms of demystifying and making people feel more comfortable or rightly identifying issues.

So, as I say, I won't ask you to answer my question as to whether you -- you know, if you're running a business and just had embarked on costing everybody billions of dollars, you would actually keep track of what the effect was.

The other thing that I would ask about, which maybe the right people aren't here because, you know, Kim is -- I mean, your empire is large, but I don't think it includes Kim yet -- is that -- is what the experience has been on the clearinghouse side.

And I think from a risk management perspective this is really kind of where the rubber really hits the road, which is to say, are the clearinghouses comfortable with what's going on?

You know, I know there are separate

clearinghouses.

Has there been -- you know, are they getting -- you've heard rumors about data and other issues in terms of trying to construct things. Are the SEFs really operating well with the various clearinghouses?

As I say, maybe the right people aren't here, but I would hope you guys would really be keeping an eye on that because that's where you would potentially be creating more problems than you're solving.

And then the final observation -- and the only place I've seen data on this is in the NDF world.

And, as you say, it's early, and you can't tell quite what's going on. But it would appear that in the short term one of the consequences of the partial introduction of the new regime is on the, in the SEF world, demonstrably larger bid offer spreads versus non-SEF world and a shift of business offshore.

Now I'm not real-time on that. I last

looked at this, you know, visiting friends in New York, looking at screens where you can really see them side by side.

And I would just -- again, I think the ultimate test in this is not even volume as much as what the bid offer situation looks like in these markets and are the markets getting tighter.

Maybe they're not tighter than they were previous to the changes, but is the delta at least positive since the introduction?

And, again, if they're not, you guys better have a -- you know, you guys better be thinking about that.

And I think, in fairness, that's part of the information that the market would find very interesting and reassuring, to understand what's going on in a more transparent way because I don't think you're yet at a point -- and maybe the market participants can talk about this, whether there's actually a visible CLOB next to the RFQ activity for market participants to understand exactly what the opportunity cost is of their transaction.

So, questions and a little editorial comment there, too.

COMMISSIONER O'MALIA: Anybody want to comment on bid offer?

MR. FITZPATRICK: I mean just very briefly. I mean, I think that leads to one of the points I made earlier. You know, when you're in a situation, whether you're Wendy or Michael, there are various styles of SEFs out there. There's your historical RFQ, disclosed models, right through the gamut to the pre-trade anonymous central limit order books, the difference being to talk about bid offer spreads.

Whether they are weighed around or not, I don't get to see the bid offer spreads away from where we are, but ours is not too bad in our central limit order book, I think.

But it's variation in that model, too, where you're faced with RFQ responses, where you pick and choose whether you want to trade or not, versus whether you're looking at a bid offer spread on a central limit order book. And it's up to you how you operate within that marketplace and how you choose to cross the bid offer spread, whether aggressively or you sit passively, waiting to be heard.

So, I mean, there are -- there will be variations and differences, and they may be wider on some occasions, depending on who the counterparty is, how big the trade is and who they're going to talk to.

But, at the end of the day, I think -- and I spoke earlier of -- the economic decisions that have to be made by participants as they go into the various SEF communities is they've got to work out what trading style is right for them and what SEF is right for them and what kind of participant they want to be in those markets.

You know, as much as I'd like to think from the evolution of these markets that a lot of these guys will come to central limit order books, the reality is that a lot of them probably won't.

MR. O'BRIEN: I just want to mention

that I want to see the central limit order books succeed, and I think part of the reason I'm not seeing the liquidity I would like or I'm not seeing the type of bid offers I would like yet is because the buy side doesn't seem to be adopting it as quickly as I would have thought.

I think in the long run you will see, in next-year RFQ, a central limit order book or at least easily be able to observe that. And at that point I think you'll see more buy side firms adopt the central limit order books, and banks will, therefore, have more of an incentive to provide liquidity there.

But, for a lot of buy side firms that I talk to, they seem more comfortable with the RFQ model.

My preference is to be on the order book, and all the trades I've done, all the MAT trades I've done through the introducing broker, have all been on order books.

I think we'll get there, but again, just like the pick-up in volume for the buy side, it's going to take a while before we get to the point where the buy side is trading in the order book and we have more liquidity providers there.

MR. SRINIVASAN: Can we sort of talk about data? So the question was, do we see these things in the data, right? We haven't been looking at Part 43 because, in theory, Part 45, the regulatory reports, should give us all the information.

We've been studying the data when we put out the weekly swaps report, which was presented is the previous TAC. The interesting thing we notice in the Part 45 regulatory reports is that we can't identify transactions that were executed on a SEF.

And Marisol has gone and has left for the day. But that's a challenge we're facing, and so we're sort of talking to the SDRs, and we're talking to the market participants.

It appears as if when the trades get reported, to us at least, the data reports we receive from a SDR, a critical field has not been populated. So we can't even see which transactions were done on a SEF.

In terms of forgetting the quality of the market, in terms of spreads and other things, we don't get message data from the SEFs.

And, even if we get message data, it's important to bear in mind a couple of sort of facts, and Tod should sort of confirm this.

So a decent chunk of the activity is happening over voice execution. You know, there is no electronic audit trail that even if we were to get message data it's not clear in what form it will come to us, for us to be able to analyze the data.

And then in the interest rates swaps base, close to 50 percent of the transaction volume is for us, which is the bulk of the risk mitigation stuff that happens.

And they're not really price-forming trades, I understand. So I don't even know how to measure bid-ask spread and even what does it mean for 50 percent of that to be happening on SEFs.

And the other -- you know, there are different execution methods that have been implemented by SEFs.

And based on this anecdotal information we have, based on what the SEFs have shared with us, a decent chunk of volume, 60-70 percent of volume, is happening through what we call midpoint volume matches, which is not people putting bids and offers, and the bids and offers matching; it's the firm coming up with the price and saying, here's the suggested price, to people who want to sort of trade at this point.

It's like a midpoint of the existing market, you know, a lot like the way -- the crossing of sort of the dark pools that operate in the liquidity markets.

So there's the midpoint, which is sort of published, and then people submit their trading interests, and trades are happening on the SEF.

If all the transactions are happening at the midpoint, or a decent chunk, that means the spreads are really tight.

So that's what we know about the marketplace. We don't have good data, or we don't have the data, and it's still a market in evolution and uses execution methods which are really different from what we are used to seeing in the futures space.

So, you know, we continue to sort of talk to market participants and understand it, but we are some ways away.

The Commission, when we finalized this swap execution -- the SEF final rules, the Commission has directed staff to complete a study for the swap market activity to make an assessment on how good the rules are and the impact of our execution method rules on market quality. So we have four years to sort of complete it, but it's not clear to me that we have the data.

So we finalized the rules -- pardon?

SPEAKER: (off mic)

MR. SRINIVASAN: No, it's not even the size. It's just we don't have the data, and the rules were finalized on May 16th. I think the effective date was a month or two.

So we talk about -- I know June 2020, and that's the deadline for us to finish it. My presumption is that we will be working with DMO to do it.

The question is, do we have the data to do it at that point in time?

So, hopefully, we'll be there. But where we are today, this is the color we have, I guess, from where we are sitting.

MS. YUN: I just wanted to add that I would say that the buy side would like to access liquidity on the central limit order books, but it's just a matter of timing and the readiness to get there.

I think right now there's a lot of competing priorities and goals that we're trying to achieve right now as it relates just solely to the RFQ platforms. There are questions about pre-trade credit checks, on block trades, on packages.

We just learned today from one of the

SEFs that now the CFTC may be asking that all block trades can only be treated as a block if all legs of a package trade exceed the block thresholds. That's something that was very new to many of us market participants, to learn of that today.

To have to build out to those systems, as well as to consider other types of competing priorities, such as there are certain liquidity pools that are only available if you register with that particular SEF -- so for NDFs, as a result of Footnote 88, if you want to continue to access those pools, you also have to sign up despite the fact that those products are not subject to clearing or MAT right now.

There's a whole host of issues that people are grappling with right now, which I think has kind of impeded the developments to, and market movement towards, the central limit order books.

MR. MCGONAGLE: Just on the question or the comment about blocks, so for multi-leg transactions, a transaction that has its own USI would need to satisfy the block-level requirements set forth in the block rules.

So we don't -- one, if you have a group of transactions and one satisfies its individual block, that's not sufficient to pull the other transactions out into the block.

So that's right; what you heard today is accurate.

MS. YUN: But would you be able to execute that one leg subject to the cap size limits and the real-time delays?

MS. MARKOWITZ: Right. You could execute it as a block, but will you be subject to -- if it doesn't meet the notional value, you'd have to report it real-time and get the delay as if it was a block.

MS. YUN: So, a cleared leg that does exceed the thresholds, would that be permitted to be subject to the block delays and the cap size limits, or would the whole -- you're saying that the entire block has to -- the entire package trade has to meet the block size limits?

MS. MARKOWITZ: The entire package.

COMMISSIONER O'MALIA: We've heard some questions about position limits on SEFs and how multiple SEFs may deal with position limits. Do you have any opinions on that?

MR. MCGONAGLE: Not for today.

(Laughter.)

COMMISSIONER O'MALIA: Well, we heard policy being made right there with the block rule. So, thank you very much.

MR. MCGONAGLE: Just on the block rule, just being consistent with what the block -- with what the regs already say, with respect to blocks.

COMMISSIONER O'MALIA: I'm sure it is; hence, the no confusion.

Bryan and then Lee and then I think we're done.

MR. DURKIN: Just another kind of contributing, I think, issue or factor is, you know, we operate in a global organization in terms of what these markets represent, right.

And so Wendy referred to it a little bit in her talking points, in terms of not creating a bifurcation, a sense of liquidity, or creating situations where there may be uncertainty due to unresolved issues from a cross-border perspective.

And so it's incumbent upon the CFTC and the foreign regulators to resolve a myriad of cross-border issues that are still creating a great deal of uncertainty, both for the operators as well as for the client base.

We've always, you know, been very supportive of mutual recognition, and the CFTC has taken, I think, a very proactive and flexible policy in that regard in terms of some of the actions that it's taken to date.

However, we haven't received reciprocal treatment from the E.U., and that creates very serious concerns not only for the swaps business but as well as the futures business. You know, we operate in both the U.S. and Europe, internationally. We have 10 hubs throughout the world.

And it's incumbent upon the CFTC and the regulators to consider the broader implications in terms of these cross-border issues and the impacts that it may have on the overall efficiency of the ecosystem that exists today.

We need to eliminate legal uncertainty that currently exists.

We need to allow cross-border markets to continue operating without threatened disruption to both operations and efficiencies to those markets.

We need to afford U.S.-based and foreign markets, and market participants, the same degree -- the same degree -- of flexibility today on an ongoing basis.

MR. OLESKY: I'll be really quick -- two points. One is e-order books and rates. They're not there yet. So that's the real challenge. And most of that activity is voice that's inter-dealer. And until there are meaningful e-order books, you won't be able to do these comparisons and you won't have a meaningful liquidity pool for the buy side to tap into.

I imagine that's going to come. We're not there yet.

The second is the cross-border point I think that Cliff started. The one place I would say -- because we operate an MTF in Europe. So we have a very active swap business in Europe.

And what we've seen with the phasing-in of the SEF rules is a definite shift in terms of currency. So there's much more dollar activity in the U.S. in SEFs, and there's a lot less euro activity because the euro client base in Europe does not want to get entangled in SEFs, so they stay on of MTF.

That's something to watch out for because I think without mutual recognition we're scaring away a part of the client base that could be an active part of the liquidity pool within SEF because they just don't want to be inside the SEF regime and they choose to keep their marbles outside, which means there's less liquidity for U.S. counterparties in euro, Sterling, yen, anything outside the U.S. That's a fact; that's happened.

MR. FITZPATRICK: Can I just say one thing?

COMMISSIONER O'MALIA: Oh, yes.

MR. FITZPATRICK: I would like to agree with my colleague over there. We, the QMTF -- that regime -- and there is still an opportunity to do the right thing there, and I think it would force the liquidity in U.S. dollar markets overseas for U.S. participants.

However, I'd like to respectfully disagree with my wounded colleague over there that e-order books and rates are there. We operate one. We've got tremendous depth of liquidity in our electronic interest rate order book. So I would argue that we are there in those markets.

Lee and I can take that one offline.

COMMISSIONER O'MALIA: He's wounded. So be careful.

Well, let me thank everyone. This has been an extraordinarily helpful day, a very long day, of course.

I'd like to thank all the new TAC members for joining and all our witnesses who have prepared for this and provided some very compelling testimony today to help us discuss this. Every panel was terrific, and I'm grateful for that, and I'm grateful for the time you've spent there.

I think we're going to continue to focus on the surveillance tools this Commission needs and the technology that we have at our disposal and how we integrate all the data.

I think we're going to continue to follow the various data reporting elements. I know Sayee and DMO are struggling to make sense of our data. And, thankfully, we do also have organizations like Tod's and ISDA and FIA that have all worked on providing new data to us to reflect on the market.

Thanks to the SEFs who have been very forthcoming with their trading behavior. This is an issue that we will continue to follow as well.

And a new issue you might want to think about in the future is this bitcoin. There has been interest in this, and maybe we'll have to take that up at a future meeting.

So, thank you very much for --

(Whereupon, at 3:36 p.m., the PROCEEDINGS were adjourned.)

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CERTIFICATE OF NOTARY PUBLIC

DISTRICT OF COLUMBIA

I, Carleton J. Anderson, III, notary public in and for the District of Columbia, do hereby certify that the forgoing PROCEEDING was duly recorded and thereafter reduced to print under my direction; that the witnesses were sworn to tell the truth under penalty of perjury; that said transcript is a true record of the testimony given by witnesses; that I am neither counsel for, related to, nor employed by any of the parties to the action in which this proceeding was called; and, furthermore, that I am not a relative or employee of any attorney or counsel employed by the parties hereto, nor financially or otherwise interested in the outcome of this action.

(Signature and Seal on File)

Notary Public, in and for the District of Columbia

My Commission Expires: March 31, 2017