UNITED STATES OF AMERICA

COMMODITY FUTURES TRADING COMMISSION

TECHNOLOGY ADVISORY COMMITTEE MEETING

Washington, D.C.

Wednesday, July 14, 2010

PARTICIPANTS:

Commission Members:

GARY GENSLER, Chairman

BART CHILTON, Commissioner

MICHAEL V. DUNN, Commissioner

JILL SOMMERS, Commissioner

SCOTT D. O'MALIA, Commissioner

Presenters:

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RGM Advisor

MARY ANN BURNS
Futures Industry Association
LESLIE SUTPHEN
Futures Industry Association

ANDREI KIRILENKO
Senior Financial Economist

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P R O C E E D I N G S

CHAIRMAN O'MALIA: Good afternoon. Today's meeting of the CFTC Technology Advisory Committee will address the necessity of applying appropriate risk management and best practices for high frequency and algorithmic trading. As futures and equities markets evolve, the speed and trade volumes are testing boundaries of our existing management functionality. This requires closer examination by the Commission to determine what new or enhanced pre and post trade controls are required to ensure the price discovery and risk management mission of these markets is protected.

I would like to thank my fellow Commissioners for their interest and attendance, and I would like to extend a warm welcome and sincere thanks to our Committee members for their participation today and willingness to join this Committee. I'd also like to welcome our three presenters who will help inform this debate.

This Committee has been reestablished

after five years to provide advice and counsel on technology matters to the Commission. We have assembled 24 individuals representing a cross section of the future and derivatives industry to participate in this Committee. This Commission will face significant technological challenges in implementing the House passed Dodd-Frank Financial Reform Bill, which provides the Commission with vast new authorities and responsibilities over the OTC swaps market.

It is estimated that the OTC market is ten times the value of the regulated futures market, and the Commission is about to be hit with a tsunami of data and new trade data.

Up until now the Commission has had oversight responsibilities over the futures markets and we receive trade data gift wrapped by the exchanges and reporting firms at the end of the day.

Under the Dodd-Frank bill, we will have a much larger responsibility to collect data from across markets, including trade repositories and swap execution facilities and in a form and format that will be useful for conducting our surveillance program.

Today's marketplace has embraced technology and invested hundreds of millions of dollars in increasing the capacity and speed of its platforms. Today trades execute in two milliseconds, 150 times faster than the blink of an eye. In the future we can expect nanoseconds to be the standard in which trades are executed, and a nanosecond is one billionth of a second. As latency is decreased, trade volumes have grown significantly. According to the CME Group, the number of messages have grown exponentially with up to 200 million messages per day and surpassing five billion messages per month.

I believe the Commission is unified in its commitment to deploying technology and understanding the impact technology will have on these markets going forward. The Commission has recently released draft rulemakings regarding co-location and reporting of ownership and control data. These rules form the foundation of the Commission's strategy to adapt to a technology driven evolution in the markets.

Today we have assembled the best in the business and I look forward to working with this Committee to develop solutions that will enable the CFTC to move into the 21st century and fulfill the statutory mandate proposed by Congress.

Over the next two years, this Committee will address a series of topics and provide advice on a recommended course of action for the Committee. Today's topic for the Committee is, should the Commission or industry adopt best practices in algorithmic and high frequency trading. We're interested to understand which pre and post trade risk management functions should be applied to ensure the markets will continue to serve the essential risk management role and enable evolution and technology.

I recognize that just as trading left the pit and migrated to the computer screen, it is inevitable that technology will continue to challenge our existing market design. We must adapt to a new regime of oversight and surveillance ensuring the mission and customers are protected.

Trading strategies are only as good as their designers, and this element of risk must be accounted for in the new pre trade functionalities. There's a limit to what an exchange can do and some of this responsibility must be born by the traders themselves.

Following the May 6th Flash Crash, there have been many questions regarding the role of computer trading strategies that may have had contributed to the rapid moves in the market during the 20 minute period. Today the Futures Industry Association will present its paper outlining several best practices that could be applied as an element of granting direct market access. I'm interested to hear from our Committee members whether the proposals are adequate and if additional control should be implemented.

More specifically, I would like to

understand what can be done to prohibit wash sales, which I find to be a totally unacceptable practice, yet the FIA paper believes such trading is inevitable in a high frequency regime.

As I noted in the beginning, technological innovations in the market require the Commission to carefully consider applying new management tools. We have assembled a range of market experts and I hope they will not be shy about offering their opinions and alternative solutions in this debate today. Let me turn to the other Commissioners before we hear from our presentations. And I appreciation everyone's attendance here. Mr. Chairman.

CHAIRMAN GENSLER: Good afternoon. Thank you, Commissioner O'Malia, for chairing today's meeting, but also thank you for suggesting that we restart this Committee after five years. I think that we probably should have had it all those years anyway, but it's incumbent upon us to get the advice of a panel of experts like this. The futures marketplace, of course, has evolved from an open outcry market, it's evolved tremendously in the last decade. In fact, I think today's marketplace, roughly 90 percent of the marketplace is now traded electronically. And though, as Commissioner O'Malia said, we're fortunate to receive daily trade data and position data electronically. There's still much we have to learn and a great deal more we need to do regarding technology just as -- for examples, while in some cases we still actually receive things in paper form.

We're actually actively considering putting out rules to automate our Form 40's and Form 102's. And if I went down the other forms that we still get paper-wise, you would say, well, what about rules for those. Well, you know, we have to take it a step at a time. But we're fortunate to get all our trade data and position data, though, electronically, as Commissioner O'Malia said.

We also, internally, we're moving towards automation of our own surveillance. We have a terrific expert staff that surveils the markets, looks at trade practices and so forth, along with the exchanges and the SRO's. But while market participants have the technology to automate their trading, we're really just now moving towards 21st century technology to have automated surveillance, looking at trade practices, having flags and filters in the automated data base, so that our professional staff of economists and analysts and lawyers can benefit from 21st century technology.

Also, aside from the regulation of the futures marketplace, I'm very pleased that we're on the verge of passage of financial regulatory reform legislation as the Senate takes up the much needed reform in the derivatives marketplace tomorrow.

And as we take on, hopefully with the Senate's concurrence with the House, and the President moving forward with this bill, as we take on additional oversight of the over-the-counter derivatives marketplace, the advice of this Committee, along with many other members of the public, is going to be widely sought, and we're going to consult broadly considering how the technology aspects of all of our rule writing.

Commissioner O'Malia talked about data repositories, but it's going to be the data requirements for swaps dealers, the data requirements for clearinghouses, the data requirements for what's called major swap participants, all of which we are to prescribe in rule, working actively with the Federal Reserve and the SEC and the other federal regulators, and the international community, as well. So this Committee will be very helpful in giving us advice directly today, but also as we go forward in the rule ranking.

So lastly I just want to say that I look forward to hearing from the panelists today on the views on the specific topics of today around algorithmic and high frequency trading, but I'm sort of upping the bar to all those other subjects, if that's all right, Commissioner O'Malia.

I want to thank my fellow Commissioners, because it took all of us to actually approve this Committee and get it in place, and approve all of you. We actually have to sign off on, you know, the way we work as a Commission, on all of you being here today, because I know you'll play a significant role in informing all five of us on these emerging challenges, and, of course, as we move forward, and have a dialogue with the public about the over-the-counter derivatives marketplace.

CHAIRMAN O'MALIA: We are joined by Commissioner Dunn by telephone. Commissioner Dunn, do you care to make an opening statement?

COMMISSIONER DUNN: Yes, Mr. Chairman, and thank you very much for convening this first meeting of the newly reconstituted Technology Advisory Committee. I look forward to hearing from the experts gathered today, and I hope that their thoughts and insights can help to inform the

Commission as we move forward into an era in our industry where technology has begun and will continue to be a dominant force in the markets we regulate.

Since I first began reading stories about the impact of high frequency and algorithmic trading in the markets, I was struck about how far technology has taken us in the short period of time since I joined the Commission.

When I arrived in 2004, traders will still in the pits, and the sophistication of electronic trading was growing so rapidly that it is my fear that the Commission may be unable to keep pace with the market and its users.

In this brave, new world, Crop Reports seem like an antiquated tool and a map of physics degree from MIT may be the prerequisite for talents of members for development of successful trading strategies.

Fortunately for us, Commissioner O'Malia has restructured this Advisory Committee at a time when the talents of the members gathered today are truly needed to help the Commission to make sense of trading that changes more swiftly than it ever has in the past. It's my hope that the Commission will continue to develop the expertise in-house to handle the technology advances in our marketplace and that our staff can work with the members of this Committee to ensure market transparency and efficiency. I want to thank all of you for your service and I look forward to today's presentations.

CHAIRMAN O'MALIA: Thank you, Commissioner Dunn. Commissioner Sommers.

COMMISSIONER SOMMERS: Thank you, Mr. Chairman. I just want to congratulate you on your first meeting of the Technology Advisory Committee. This Technology Advisory Committee is very important to the Commission. Its relevance in today's marketplace has really never been higher. And in the five years since the Committee has met, the industry, as you know, has continued to grow and evolve. And we have seen electronic platforms gain more and more volume while trading floors have closed.

Technology is one of the key components of market innovations. And as regulators across the globe examine the appropriate regulatory structures for our financial markets, these technology issues are at the forefront of all of the issues or concerns that the regulators may have. And I'm very interested in especially the issues that are on the agenda today of high frequency or algorithmic trading and market access issues. And I just want to thank all of you for donating your time to the CFTC and being here to advise us on these issues.

CHAIRMAN O'MALIA: Thank you. Commissioner Chilton.

COMMISSIONER CHILTON: Thanks, and thanks, Mr. Chairman, and thank you, Mr. Chairman. What I'm looking to get out of this is really some education from you all. I think that, you know, the computer technology, as Commissioner Dunn said, you know, has changed everything, and with regard to the Flash Crash, not that computer technology was the impetus certainly, but it certain exacerbated my view, the down and the rebound, and so it's just something new that we have to pay attention to.

When I was a teenager, I did something really stupid. Kenny Mirr and I took out his folks' new car, and we went faster than I'll even admit here, really fast, the fastest I've ever been in a car, and we didn't know all of the ramifications, and we weren't so -- we were pretty stupid. There's also this new car out, I don't know who knows about it, called the Tango. The Tango is this car, it's an electric car, George Clooney has one, it will go 150 miles an hour in like ten seconds, but just because it can doesn't mean it should or that we should all the time. Just because something is fast doesn't mean it's all great. So, you know, computer technology is super, it adds liquidity to the market, it adds access like we've never seen, and for auditors and for exchanges, for regulators and for exchanges, it's great because we get a data trail.

So there's many great things about it, and I'm not suggesting we should limit it in any way, but this Committee will be really helpful in getting us to think about these myriad different ramifications of it, and if we just keep an open mind, then I'm sure that we can consider what, if anything, we ever need to do about it. So thank you again for you all being here, I appreciate your time. I know it's sort of a pain to take it out of your days, but we very much appreciate it. Thank you.

CHAIRMAN O'MALIA: Thank you. What kind of car were you driving?

COMMISSIONER CHILTON: Not a Tango.

CHAIRMAN O'MALIA: Since this is our first meeting, I thought we would -- it would be helpful to go around the room briefly, give us your name and who you're representing. And let me just reiterate that we greatly appreciate your participation here. This is an interesting and complex issue and will be an important part of our markets going forward, so your input is invaluable at this point. We can start with Doctor Bates.

DR. BATES: Thank you. Hi, I'm John Bates and I'm the CTO of a company called Progress Software. I also founded part of our company called a Palmer. And we're in the space of high frequency trading, working with, you know, buy side and sell side, algorithmic trading, free trade risk, market surveillance, now working with trading venues and regulators. So I've been enjoying learning about that for the last ten years.

MS. BOULTWOOD: Hi, I'm Brenda Boultwood, I'm the Chief Risk Officer at Constellation Energy. We're a national energy company focused on generation, as well as sales of energy to end user customers. We participate in power, gas, oil markets, and, you know, feel that this Committee working collaboratively with the CFTC will, you know, come up with the best interpretation of financial reform. And, you know, it's a pleasure to be here and I look forward to working with all of you.

CHAIRMAN O'MALIA: And Brenda should have said from Baltimore.

MS. BOULTWOOD: From Baltimore, and before that, financial services in New York and some time as an academic, as well.

MR. BREYAULT: Good afternoon. My name is John Breyault, I'm the Vice President of Public Policy, Telecommunications and Fraud at the National Consumers League. We are a national organization, we're actually the nation's oldest consumer organization founded in 1899. And my role here is to advocate on behalf of consumers and workers to ensure that prices are kept reasonable and predictable for end users.

MR. COSGROVE: I'm Michael Cosgrove, I'm Managing Director and Head of Commodities and Energy for GFI and North America. GFI is a global interdealer broker. We match principals in a broad range of financial and credit and commodity markets globally. And I'm pleased to be here.

MR. DEWAAL: My name is Gary DeWaal, I'm Senior Managing Director and General Counsel for

Newedge based in Paris. We're a joint venture between Societe Generale and Credit Agricul Corporate Investment Banking. We're one of the world's largest, if not the largest exchange traded derivatives broker. We're members of most of the major derivatives exchanges around the world. And, obviously, the topics that are going to be discussed in this Committee are very important to us and our clients, and we're honored to be here. Thank you.

MR. HARRIS: I'm Doug Harris, Managing Director, Promontory Financial Group. We provide consulting services in areas of risk management, compliance, corporate governance, internal controls to the financial services industry. I'm happy to say that one of our previous clients was the CFTC, and we provided advice to the Commission in connection with the enhancement of their market surveillance program.

Formerly I was General Counsel and Chief Operating Officer of Broker Tech Futures Exchange and Broker Tech Clearing Corporation and General

Counsel of J.P. Morgan Futures.

MR. DONAHUE: I'm Don Donahue, I'm Chairman and CEO of Depository Trust and Clearing Corporation. We are the clearinghouse for much of the securities markets in the states involved in those activities elsewhere in the globe. We also operate the global trade repository for over-the-counter credit default swaps and have obviously involvement in the OTC derivatives markets through that function and other related functions. And we're involved in all kinds of other things, but those are the core activities.

MR. DURKIN: Good afternoon. I'm Bryan Durkin and I'm the Chief Operating Officer for CME Group and also the Managing Director over all the products and services for the exchange. It's an absolute privilege for me to be invited to join this distinguished group today and look forward to offering any contributions on behalf of our company.

DR. GORHAM: Hi, my name is Mike Gorham, and I love markets, but I'm currently the Director of the IIT Stuart Center for Financial Markets at Illinois Institute of Technology. And because I spent two years here at the Commission, a part of my brain and certainly a part of my heart is still a regulator.

CHAIRMAN O'MALIA: Welcome back.

MR. GORELICK: Good afternoon. I'm Richard Gorelick, I'm the CEO of RGM Advisors, an automated professional trading firm based in Austin, Texas. Since I co-founded RGM with two partners in 2001, we've gradually grown the firm, and today we employ about 115 people. We actively trade U.S. and foreign equity securities, U.S. and foreign futures and other asset classes using automated strategies. And I'm thankful to be here today. Thank you.

MS. BURNS: I'm Mary Ann Burns, I'm Executive Vice President for the Futures Industry Association. And I'm not a member of the Committee, I'm here today because -- instead of Peter Johnson from J.P. Morgan who is a member of the Committee, and I'm the scribe of the FIA market access recommendations, and I appreciate the opportunity to be here.

MR. KIRILENKO: Good afternoon. I'm Andrei Kirilenko of the Office of the Chief Economist of the CFTC.

MR. GRENSTED: Good afternoon. Simon Grensted, Managing Director of Business Development at LCH.Clearnet. We operate two clearinghouses and have been clearing OTC businesses for well over ten years, particularly in swaps and swap clear and repo clear within Europe, and more recently in CDS. So we clear OTC derivatives, exchange derivatives and cash instruments. Thank you.

MR. JOACHIM: Hi, I'm Steve Joachim, I'm the Executive Vice President for Transparency Services at FINRA. We are the self regulatory organization that oversees the broker-dealer community and regulates the over-the-counter securities based markets, as well as does other market regulation for -- by contract with other marketplaces and operates a number of transparency facilities, including Trace, which is the transparency facility for fixed income products largely today in the U.S. And we also operate things like the over-the-counter bulletin board and pink sheets and basically transparency facilities that cover the over-the-counter marketplaces.

MR. KYLE: Hello, my name is Pete Kyle, I'm a Finance Professor at the University of Maryland, and I study market depth and market liquidity and speculative markets of all kinds.

MR. O'CONNOR: Gary O'Connor, I'm the Chief Executive Office of IDCG. IDCG is a CFTC regulated clearinghouse for OTC interest rate derivatives. I'm very pleased to represent the company here today and happy to help in any way we can with the heavy lifting that the Commission has ahead of it. My background prior to IDCG was as a liquidity provider and risk manager in the OTC interest rate derivatives base for the investment banking community.

MR. SCHATZMAN: Hi, Matt Schatzman,

Senior Vice President, Energy Marketing for BG. BG is a global energy provider. We are involved from the wellhead all the way to the burner tip, one of the largest LNG producers and marketers in the world. We're also a fairly large player in the U.S. natural gas marketing business. I'm excited to be here. I look forward to the discussion today and the discussions to come over the next two years.

MR. SECUNDA: Hi, I'm Tom Secunda, I'm from Bloomberg, I'm in charge of the Financial Division of Bloomberg, which is the part of the Bloomberg Terminal and some of our other products like trading systems and execution businesses. We tend to often be a data source for a lot of you around the table, as well as analytics, as well as doing some of the -- connectivity to exchanges for many of our customers also, as well as pricing, and I'm really looking forward to participating in the meeting ahead.

MR. VICE: My name is Chuck Vice, I'm President and Chief Operating Officer of ICE or

Intercontinental Exchange. We operate a number of OTC markets and futures exchanges, clearinghouses globally, and appreciate the invitation to serve on this Committee.

MR. WHITE: Good afternoon. I'm Matthew White, I am the Senior Economist for ISO New England. We design and operate the electricity trading platform and delivery system, serving New England states. As Senior Economist, I am essentially the lead architect, if you will, for our auction based market design, all of our trading rules, and it's a pleasure to be here. Thank you.

MR. WHITMAN: My name is Chuck Whitman, I'm the Founder and the CEO of Infinium Capital Management. We're a principal trading company based in Chicago. We have 250 employees with offices in Chicago, New York and London. We are a relatively unique firm in our space because we are really a multi strategy firm.

We were the first firm to quote options electronically on the S&P mini options. And pretty much every commodity future that's traded on the exchange, we've been the first market maker in the option space. We also are a large market maker in the future space, as well.

We trade across the term structure curve, from everything from very short term trades, the kind of trades we might talk about today, to trades that we trade out anywhere five years out in time.

As I said, we have multi strategy, everything from short term algos to long term market making. We do not have a heavy presence in equities, our presence is primarily in futures and futures options. And I'm excited to be on the Committee and to be part of the dialogue. Thank you.

CHAIRMAN O'MALIA: I think we have Michael Ricks with Cargill on the phone. Michael, would you like to say a few things?

MR. RICKS: Yes; my name is Michael Ricks, I'm with Cargill, Incorporated out of Minneapolis. Cargill is largely a business company. We operate probably primarily in the front and the supply curve, originating bulk commodities, livestock for further process or for exporting. We also are in the space -- energy with natural gas, electricity, carbon credit rating. Thank you.

CHAIRMAN O'MALIA: Well, thank you very much. Let me give you a flavor of today's agenda. We're going to have three presentations today. We're going to start with Mary Ann Burns, representing FIA, a 15 to 20 minute representation. After that, I encourage the Committee members to offer their thoughts on the presentations and offer questions, advice, whatever, so we have that fresh, and we'll go through the other -- we'll take a short break after that and we'll have the other two presentations. After the completion of all of the panelists, we're going to open it up for discussion, and all of us can ask questions on that. And then prior to that, we may have a little discussion about future research or ongoing research for this Committee going forward. So with that, I think everybody did real well with the microphones. There's a limit to how many we can have on, and if you want to be recognized for speaking, just touch it and we'll light your light and I'll call on you. We have restrooms here on this floor, and there's also -- there are additional restrooms down the escalator in the lobby if you're looking for those for the audience, as well. With that, Ms. Burns.

MS. BURNS: Thank you very much, Commissioner O'Malia, and thank you for inviting us here today to talk about the FIA market access risk management recommendations.

I'm going to begin by giving you an overview of how the study came about and explaining the overall approach we took to the recommendations, then I will turn it over to Leslie Sutphen, who is a President and current board member of our FIA Information Technology Division, and participated in the Market Access Recommendations Working Group to walk you through the actual recommendations. The FIA has a long standing commitment to best practices around electronic trading. We previously published a study on error trade policies, a paper on risk management practices for direct access, and we included a discussion of post trade risk controls in our clearing risk study which was released last year.

In January of this year, the FIA Board determined that further work was needed on risk controls around direct access as a result of increased demand from trading firms for direct access, more exchanges outside of U.S. and Europe offering direct access to their customers. And the Board also recognized the need for a standardization of practices. It's a lot more effective for a global FCM if they can have standardization of risk controls across markets than having to manage risk controls individually market by market.

We also wanted to send a message to exchanges and regulators that risk is a high priority for futures and options market participants. I don't have to explain to this group, of course, the global nature of the business. And it would be preferable for the industry to establish strong standardized risk controls rather than each regulatory authority or exchange developing a unique approach to the managing of risk of direct access. In January, we assembled a working group of trading firms, clearing firms and exchanges, both U.S. and international exchanges, to advise us on the document, to contribute to the document, and you will see it's a mix of firms. And also within the Committee, the technology -- the side was represented, the business side, risk management, and also, of course, the technology side.

We were very surprised how much agreement there was among this diverse group. We actually moved quickly and were able to put together the recommendations in time for our Boca conference, where we presented draft recommendations to more than 30 international exchanges. We asked for their feedback, we took comments for several weeks, and then we published the recommendations on April 27th.

Before we could move too far ahead with the study, we had to define direct access. There's a lot of terms being bandied about, naked access, sponsored access, direct market access. We boiled it down to three ways that we looked at direct access. The first is direct access via a clearing firm. The trading firm's orders come through the clearing firm's infrastructure, and the risk controls are applied there. The next category is direct access via vendor. This would be a vendor like CQG or RTS. The trading firm's orders go through the vendor system and are not subject to the risk controls of the clearing firm. And then the final category would be direct access to the exchange. The trading firm's orders do not go through the infrastructure, or the clearing firm, or a vendor, but may reside in a co-location facility and go directly to the exchange.

So in the study we covered execution

risk controls. Commissioner Chilton's parents would have benefited for some pre-execution risk controls on that car. So those -- we address those kinds of risk controls.

We address post trade risk controls. We also included a section on conformance and certification testing. And although we don't view co-location as a risk management issue, there's been a lot of discussion about co-location, and we just, on Monday, filed our support for the Commission's co-location proposed rules.

We also included a section on error trade policies, because there's been a lot of discussion about fat finger errors. We felt it was important for exchanges to have standardized error policies. The components of the study, we fashioned the study so that we'd have -- each recommendation has a principal and each has an implementation recommendation. We did that because we recognize that exchanges around the world may offer multiple products on the same platform, and that they are, of course, subject to the regulations of their jurisdiction. The implementation recommendations then talked about the preferred way that we would like to see the principal implemented. So with that, I'm going to turn it over to Leslie to talk about the execution risk controls.

MS. SUTPHEN: Thank you, here we go. Thanks very much to the Commission and to the Committee for allowing us to present the results of our study. As Mary Ann said, this was a very broad based work with lots of representation. Most of us on the Committee have dealt very actively with this over the past ten years and have come up with lots of ideas about how we could improve things.

So we came up with a list of what we thought were kind of fundamental risk controls that were -- that needed to be put in place in order to put some kind of order in what we have currently. I think first and foremost, we recommended that there be some ability to set a maximum order size, a so called fat finger limit, and that these order sizes should be set not only across all products, but we should have the ability to set them on a product by product basis, because, obviously, a maximum order size for a very liquid, high volatile contract would be different from a less liquid, less volatile contract, and so we recommended that that type of granularity be put in place.

And we also recommended that these controls be, as Mary Ann mentioned, at the exchange level because that's sort of the least common denominator where it could be found, otherwise, they reside in various vendor systems and in various proprietary systems, and they're not standard, and they're very difficult for clearing firms to maintain and to monitor.

We felt that they should be mandatory because there's lots of concern about adding latency to trading, and if everybody has the same degree of latency added, we felt that that would be a more fair way to put it in place.

The next recommendation was to put sort

of a, not really a credit limit, but an intra-day position limit in place, the idea being that there should be some kind of speed bump to prevent traders from taking on positions that they perhaps shouldn't be taking on or from trading sides that they didn't intend to trade. I have to say, in all my years of working with this, I don't think there's very much unintentional trading that goes on with electronic trading, but I mean there's no intentionally wrong trading or over credit limits, but there is a lot of unintentional trading that takes place because of the nature of software and computers and everything else.

So I think there was unanimity amongst the working group that there be some sort of speed bump put in place about a maximum long or a maximum short intra-day position, nothing really terribly sophisticated, there was a lot of debate on that. Some of the risk people would like to have margin controls and things like that, but the problem is that we're talking on an exchange level here, we're not talking across all exchanges and across all asset classes, and so it would be difficult to implement sophisticated credit controls on a pre-trade basis that would be meaningful.

Another key component that we recommended is a cancel on disconnect feature. We felt that if a trader or an algorithm can't control the trade, that it shouldn't be in the market, that that could lead to unintended consequences. There is some argument that some types of traders would like to -- that are spreading, for example, would like to be able to maintain those orders anyway, and so we think that that should be optional, that you should have the right to opt in or opt out of cancel on disconnect, but we thought that that was sort of a fundamental requirement of most electronic marketplaces.

If you go to the next page, another fundamental risk tool would be a kill button, not a button, per se, but a process or a tool that would enable you to not only prevent further trading from an individual or from a firm, but also remove all the working orders from the market on one easy step.

What we found in practice right now is that if these tools aren't available by the time you get your manual out and figure out what the person's access is and where it is and cancel the orders, that it often -- quite a bit of activity takes place, and so we would like it to be more automatic and easier to implement.

I combined two things here, the order cancel capabilities. Some exchanges offer very, very good, and we've got one in the -- two in the room that offer very, very good ability to monitor orders and cancel individual orders. It's very good if a person loses control of their algorithm and wants to know what they're doing. And we recommend that other exchanges also facilitate the ability to cancel individual orders and monitor orders. I know Commissioner O'Malia mentioned that he'd like to talk a little bit more about the wash trade policy.

We felt -- there was a lot of debate on this on the Committee. It's not that we don't -- nobody is advocating wash trades, it's just that we could not come up with a technological solution that would prevent wash trades.

What happens in reality is that firms like Richard's and others have multiple algorithms operating at the same time, and very often those algorithms end up trading with each other. And we've made some attempts, even we've worked with the CME and with ICE --

MR. GORELICK: You might not have seen it. Did Richard have a comment on that?

MS. SUTPHEN: And, you know, unbeknownst to them, and so the CME I know, and ICE, they have made some attempts to identify the individual algorithms so that -- with specific identifiers so that they can tell that it's not an actual intentional wash trade. But nevertheless, I have to say that there are instances that come up where a firm ends up trading with itself where it was an unintentional wash trade. So I think, you know, we're open to suggestions on that how might be made more clear, but the Committee felt that, in light of the fact that everything is automatic and that there are multiple algorithms, that the whole wash trade rule may have to be clarified and made more specific.

The next thing, drop copy. We're going to move on to post trade controls. The general feeling on the Committee was that truly sophisticated credit controls need to take place, hopefully in real time, but after the trade has actually been executed or the order has been placed, because it's, as we said, impossible to make a pre trade calculation on an exchange by exchange basis.

But there are some improvements that could be made to what's being offered that would enhance the ability to make immediate post trade calculations, so called drop copy functionality, where an order, as soon as it hits the matching engine, a copy of it is also sent to either the clearing firm or the trading firm.

Everybody wanted to have this in place. And there are many cases where somebody doesn't -- their software fails and they don't know that they actually either haven't cancelled orders or have placed orders. And if you have the drop copy functionality in place, they get a second source of information that can validate that they're doing what they intended to do.

So many of the exchanges now offer this, we're just encouraging -- we're just intending to encourage other exchanges to offer this. Most exchanges obviously offer post trade executed cleared trade reporting, but the timeliness of that is not universal. In some cases it can take up to an hour or two depending on how well the exchange has engineered their clearing solution.

In the U.S. markets, I have to say it's generally pretty timely except in real heavy volume days. But we would like to have both of these, because you also want to see what's actually taking place, and risk engines like to see what's actually being used up and margined.

Aside from post trade controls and pre-trade controls, we thought that the exchanges had a role to play and the clearing firms have a role to play in ensuring that algorithms are properly tested under various scenarios. There's been a long history among the major electronic exchanges, CME or -- of ensuring that people who are writing to the exchange directly test what they're doing under certain test scripts and make sure that they won't have unintended consequences to the marketplaces, so we were advocating that that take place, as well.

As Mary Ann mentioned, we did include co- location in this paper. We don't regard it as a risk management practice, but we felt that we should state that we think co-location should be offered equitably to everybody, everybody that can afford it, you know, it is rather pricey in some cases, but that there should be no prejudicial distribution of co-location facilities, there's got to be some, you know, open to all.

On error trade, I wish -- this was a lot of back and forth here, but the idea is that we would like exchanges -- prices to be legitimate prices, and stand, and we would like clear rules as to when they may not be legitimate trades. And I think the U.S. futures exchanges in general have put very, you know, a long history of that, put very good rules in place about when a trade should be busted or shouldn't be busted, but we felt that we would advocate such types of policies for other exchanges globally to adopt. Do you want to take over the next steps, Mary?

MS. BURNS: Everybody says, okay, what are you going to do now. The next steps that we plan for the study will continue to promote the market access recommendations around the world. But we plan in August to survey exchanges, to ask them about, you know, who's offering direct access, what are the rules they've put in place around it, what are the risk controls that they have, do they offer co-location proximity hosting, and what exactly is the error trade policy.

Once we collect all that information,

we're going to publish it, then we are going to continue to use that information to meet with exchanges and talk more about how they can get better risk controls in place.

So this is only the beginning. And just in conclusion, I'd like to say that we would like to emphasize that we believe low latency traders are a very important part of the market. For their price discovery, they add liquidity, they tighten the bid ask spread, so the report does make note of that.

And we also believe that risk management is a joint project of the exchange's clearing firms and trading firms. And, in fact, at the beginning of the report, there's a whole list of things that are commonly undertaken by those -- by all three parties to make sure that direct access works and does not harm the markets. Again, thank you very much for allowing us to be here, and we're happy to answer any questions that you might have.

CHAIRMAN O'MALIA: Thank you very much.

I'm going to start off the questions, and I do want to follow up on the wash sale, get everybody's opinion on this. Mr. Durkin, in his paper, mentioned that they're working on addressing it through their smart and the rapid systems, but our statutory -- we have statutory obligations to enforce against wash sales and wash trades, and that isn't an option, we have to do that.

So I'm trying to figure out how, under this low latency environment, how we're going to facilitate that and make sure that we can enforce on this. Is there a self-reporting proposal you're considering? Is there -- you mentioned it's not technically feasible, some of these technology vendors may differ with you on that opinion, I'd like to hear from everybody on how we're going to deal with this wash sale problem.

CHAIRMAN GENSLER: Can I just add?

CHAIRMAN O'MALIA: Yes, please.

CHAIRMAN GENSLER: And maybe if the exchanges could tell us how prevalent is it, I mean is it something that happens, you know, one in a thousand trades, one in a million trades, you know, just -- or one in ten trades?

MR. VICE: I don't know what the ratio is, it's a very small number. I mean I think we actually do offer a capability by a customer, if you want to prevent one of your traders from being able to hit an order another trader put in, or his own order for that matter, we can prevent that. I think that's not practical for algorithmic traders or even prop shops that may have, you know, ten -- TT traders, each one of them trading their own individual strategies.

And I'd also I guess remind the group that, I mean at least from my experience, wash trading has to have an intent element to it, as well, it's not just the mechanical occurrence of same account ownership being on both sides of the trade.

I think we, you know, we have reports of when those occur, we look at who it is, we look at what the frequency is in a given market, so, you know, does it look like a random distribution, in other words, an algo or a prop trader is not crossing his own orders with anymore frequency than the amount of volume, you know, his share of the market anyway, so certainly if that's less than his share, that's a good indication that it's a random type thing. I mean these guys are market makers, they're on both sides of the bid and offer, they provide a lot of liquidity, and so this is going to happen.

And so I think, you know, when it does happen, we want to know when is it happening, with what frequency, is it for size, is it for one lot or is it 400 lots, did the price move. And so you have to -- it's much more of a subjective oversight process I think than just a black and white list, where you can say, okay, here, we're, you know, here were the list of problems.

MR. DURKIN: I would agree with Chuck's summation. I mean procedurally as we look at these situations, and they do occur, in comparison to the overall activity during the day on a relatively small basis, but we have programs in place to look specifically for instances where there's wash trading.

And in my paper, I enunciated how clearly, you know, and how seriously we take our responsibilities in that regard to look at and reconstruct all of that activity. But intent plays a very important role in that process, and we have found situations where, you know, users are totally unaware that those transactions occurred opposite themselves, and, you know, we take those situations into consideration. We work with the firm to make sure that those types of situations don't occur in the future. We track those situations; if there is a repetition, then we take appropriate action.

So, you know, I don't think anybody in this room would ever suggest that they take the responsibilities that they have as SRO's or the Commission's responsibilities lightly as it deals with wash trading. However, there is, you know, the phenomena of the frequency, high frequency transactions that take effect in the likelihood that one could trade opposite itself, and, you know, we look at those things with all due diligence to make sure that our markets are safeguarded.

CHAIRMAN O'MALIA: Doctor Bates.

DR. BATES: So I mean I think, Commissioner, this could be an opportunity for you to have one of your, you know, best practices perhaps around wash trading. And I agree about the points it's, you know, difficult, and maybe there's innocent things involved, and it's the intent, so that's right, that's the point.

But other trading venues track this. Even regulators like, you know, in the equities markets, the UK's FSA is even tracking this. So I think one of the principals that's used is, if you can record all the instances of where they happen, you can log them historically, you can detect them in real time even, but then log them historically and cross reference, then you can see the patents where, you know, you can follow up where you start to see it happen regularly, you can determine, is it innocent, you can look at the audit trail, and you can start to launch investigations, because I think the danger for the Commission, the danger for, you know, trading venues is false positives, it happens once, it was innocent, there was no intention, and then suddenly you launch, you know, an investigation.

What you want is to see patents overtime, where you see individuals or groups that are in breach. And if you give guidance around best practices, this is what you should try in avoiding your algorithms and your practices and your trading, and then if you can then follow up on that, and, you know, people know you're watching them, you're firing a shot off the bows, and I really think that's a good thing to say to the market from the CFTC's point of view, that you're watching, but you're not, you know, you're not like a jittering, you know, thing every time something happens, but you're watching, observing, learning, turning events into wisdom over time.

MR. WHITMAN: I also want to add to that, I definitely agree with all the comments that were made, that patterns I think would be very key to recognize wash sales. I think it might be helpful in a business like mine, we might have a situation where we are making markets, and let's say S&P many options, and we are auto-quoting, so we are distributing bids and offers that are automatically updating.

And let's just say that a customer comes in and sells us S&P calls. We might be running an auto hedge, which will automatically sell S&P E-Mini futures, and at the same time I may have another group that trades correlations between the stock index futures.

My group that's running the correlation on stock index futures may have a subsequent bid in E-Mini futures against a bid in let's say the Russell. Well, when we auto hedge, in theory, we can trade -- we can hit our own bid that we're working in another strategy, which in all honesty, could cause us to sell. Maybe we have another group that's working a book logic algorithm in the Russell and could cause us to hit the Russell. I mean this doesn't -- in theory, it's possible, it wouldn't happen very often, but you could have a chain where we actually trade with ourselves a couple of times.

One thing I would say, and obviously the enforcement is always such a big deal, in cases like that with ours, we could show you strategy ID's. There's ID's electronically in our data bases that show what every kind of strategy does. And you can see manual trades, and you can see algorithmic trades, and each strategy ID is associated with an algorithm, and that's an automatic trade. So you could actually see patterns that could explain by strategy ID how it unfolded.

If I saw a manual wash, manual wash, that would be more interesting to me than seeing two independent strategies that are automated trading with one another, if that helps.

MR. DEWAAL: I mean I think the

Commission itself recognizes the fact and just the position limits and the exemptions from, you know, certain applications for an individual that might have different trading strategies, unique different trading strategies. I mean there's a process to prove that there's different unique non- controlled trading strategies. So I think there's a precedent out there to say that, you know, you may start off with a presumption that match, buys and sells or a wash sale, and it may be our obligation to demonstrate that, in fact, it's not a wash sale, and it's consistent with I think the Commission practice to understand that, in fact, you know, just because you have the same name doesn't mean you don't have distinct control.

CHAIRMAN O'MALIA: What about the thought of a self-reporting, and as a best practice, say, hey, at the end of the day we found this, because, otherwise, we're going to be going through the data and we're going to try to start matching these things up.

MR. DEWAAL: Well, I can tell you as a

firm that has a global obligation of, I think it's the same system you guys use, the Actimize System, we do monitor trading activity through two systems, we use Actimize, and a system called Smarts Broker. And you probably don't want to share a number globally of these kind of transactions, I'm not sure, because most of them are very low volume. You may want to set a threshold, there may be standards, you know. I think it's -- my guess is that if you saw a pattern, if your enforcement division saw a pattern, you would come to us, and hopefully by that time, we're able to come back to you and say, you know what, we've already looked at that and here's the explanation. But I'm not sure you want to get the volume of transactions, because I think in a -- there's enough out there that this is probably more prevalent than you want to know.

COMMISSIONER CHILTON: I have a little bit of a related question. And people may think I'm a conspiracy theorist here, but merely a question, and maybe I'll start with Chuck. We talked about this a little bit last week, or maybe it was early in the week, anyway, sometime with Jeff about algos on algos, Leslie, but not in the sense of wash trade, and here's the conspiracy part.

If somebody thinks that they can trigger an algo of somebody else by something, whether or not it's spoofing or something else, maybe they can -- can somebody do something like that, trigger somebody else's algo intentionally, and then use their own algo to go and take advantage of that?

Now, I know that's like double secret agent stuff, but we've seen weirder things happen. Is this something that we should be thinking about, even though it may seem far fetched, Chuck?

MR. VICE: I guess it may be a better question for some of the algorithmic traders in the room. But I mean I think the -- what causes traders of any ilk to put an order in and withdraw an order and how long they leave it in, there's an infinite number of reasons that people do that.

And the interplay of all that in a marketplace, you know, we can't know the reasons people do things.

As the exchange operator, we certainly look at what they're doing and try to determine what was the market impact and did they do anything that was against the rules or illegal.

But in terms of putting an order in and why they pulled it, that in and of itself, there's nothing wrong with that. I think one of the things this Committee -- something we can do going forward, I mean people use terms like spoofing and other terms, I don't know that anyone has defined what those are, and if they have, exactly what is it that we're looking to -- what type of behavior are we looking to discourage, and I think that would be helpful to do, to get clarity for everybody, and then the participants exchanges and others can go away, and whatever it is that the regulators or the industry has decided they don't want to occur, we'll prevent it from occurring. But I feel like right now we're chasing ghosts a little bit with people, throwing around terms, whether it's wash trading or spoofing, and they're not very well defined, and so it's very difficult to decide if there's a problem, number one, and number two, what the solution would be until I think we clarify what it is we don't want.

Is it that we don't want people to be able to put an order in and remove it 50 milliseconds after they put it in? I mean I think that kind of fundamental discussion may be what --

COMMISSIONER CHILTON: Well, even if it wasn't -- John had something, too, Scott, but even if it wasn't something that somebody spoofed, which -- and by the way, I mean there are things where you put orders out there and pull them back that could be problematic, so go on the record. I mean -- but even if it was something that wasn't maybe instigated by someone else, once they saw something happening with the trader and knew that the algo might be running, then they somehow would take advantage of it. Anyway, I'm just curious whether or not this is even a hypothetical thing we should be thinking.

DR. BATES: Yeah, I mean, Commissioner, it absolutely is. We reserved this in our customer base in the high frequency trading world for a long time, and, you know, high frequency trading is a bit like the Cold War, you know, you've got Russian submarines under the, you know, Atlantic, and U.S. submarines are trying to find them, you know, it's like that all the time, and firms are trying to reverse engineer, well, that's the fear certainly, that they're going to work out how to -- what an algorithm is doing, it's found a nice, little pattern and trade that no one knows about, some kind of statistical arbitrage, and then they might found out what it is and trigger it or take advantage of it, so that's why there's constant change in the market, plus the fact there's a statistic that's been published by, you know, an analyst firm in the space called the AITE Group that says the average shelf life of an algorithm is three months.

And that indicates -- and I think that's coming down, so that indicates the fact that people are having to change these things all the time, A, because the market is moving all the time and they're becoming less profitable as the market becomes more efficient, and B, because they're fearful or may experience people reverse engineering and taking advantage of them. So I think your fears are not paranoid, they're reality.

CHAIRMAN O'MALIA: Rich.

MR. GORELICK: All right. I would agree with what John said, that is sort of part of trading I think in any market, where people try and put in orders to try and induce other people to trade in particular ways. I think it's not much different in the algorithmic world.

Over the years, we've noticed -- and I have to say it's been a while since I've been aware of something like this, but we've noticed people trying to, what we perceived as trick us into doing certain things.

I think it's actually the algos that are most likely to be the targets of this kind of thing, because a human is much better able to recognize something like this more quickly when the environment has changed.

So I don't know that this is a serious issue that deserves a lot of regulatory attention. When we've done -- when we've noticed this in the past, we've changed our algorithms to be more resilient to that kind of thing, and I think that's sort of the type of learning that goes into any trading environment. It's not caused significant problems, it's caused, you know, mild losses, and we detected that and went ahead and adjusted our behavior, and I think that's what -- sort of a healthy way that markets respond to that type of activity.

MR. WHITMAN: Actually, I take a different view on that. One of my experiences has been -- I think, first of all, it's helpful, like when we have these discussions, there's really -- there's two types of trading, you have either trend following or momentum strategies, which are based on taking a price and hoping to sell that price higher, and you have mean reversion strategies, which are based on a mispricing and an expectation that prices would revert to the mean.

And in the market, you have a constant battle between these strategies, between momentum and mean reversion. When we talk about algorithmic strategies, I mean it's such a general term, it's really hard to use that term, because I think -- like, for example, I mean I have algos I've run for eight years, never changed them, they work great, there's no reason to change them, I'll be running them eight years from now, and there's others that, I agree with John's comment that, you know, 60 days, they change, they change quickly, but they're different, and they have different purposes and different reasons. One of my experiences has been, our firm at our Corps, we're really a spreading firm, so we constantly look at relationships between one thing and another or a basket of things, a basket of markets, and when somebody tries to manipulate or push a market, what ends up happening is, the shock of that push ends up being absorbed across a basket of correlated markets, and it becomes very hard for any length of time to push the market -- to punch prices through in one market, because you simply have, you know, if somebody let's say wants to sell heavily into my bid in S&P's, well, there's a world of places I can go with my S&P's.

I can go to -- I can sell NASDAQ, I can sell Dow, I can sell Russell, I can sell a basket of S&P stocks, you know, 50 stocks against it that get me to -- that help me mitigate the risk. And so, you know, where it could be possible in very short periods of time for firms that are trying to take a penny here or a nickel there, I think in the long run, it's really hard to do, and I think that the biggest thing that causes large price moves are the orders that come from end users that are trying to hedge, and from large hedge funds in that nature that have identified some kind of longer term mispricing. So I do feel like in the short run, it's really hard to push a market hard in one direction because it ends up being absorbed by all the other correlated markets.

DR. BATES: Yeah.

CHAIRMAN O'MALIA: Let me change it a little bit. This best practices documented obviously raises the expectation that it's going to be implemented and everybody is going to embrace it, and there's a time frame in which that is going to happen, and I think maybe this hearing might raise the expectations for that, as well. Can you give us a flavor of where this stands and a sense of how it's going to be implemented, if it's going to be implemented?

MS. BURNS: Well, of course, the FIA doesn't have any regulatory powers to make people implement them, but certainly customers and trading firms together going to exchanges around the world and saying this is what we'd like to have done, it helps you protect your markets, it helps us do a better job of managing our risk controls.

So I can't give you a timeline. As I

said, we will go around and survey exchanges to see where they are in the process of implementing risk controls for direct access, but it's probably a long time horizon for some exchanges to get to where some of the U.S. exchanges are today.

MS. SUTPHEN: I will add to what Mary Ann said. Since this paper came out in March, there has actually been quite a bit of progress with it, particularly with the U.S. exchanges, but also with Euronext Life and Eurex. There are major advances being made on the risk control side, at the exchange level. The CME has just implemented mandatory controls for direct access clients on Globex. I think everybody has the will to do it at least in the, you know, the major exchanges are already well down the road on this. I think where we were hoping to see additional progress is in some of the smaller markets, Asia in particular.

MS. BURNS: Just to add, I think that the exchanges in Asia that are just starting down this path are looking for guidance on how to implement this. So they've been very receptive to the proposals we put together so far.

CHAIRMAN O'MALIA: I guess the reason we have these committees is to bring everybody together, and so we were obviously able to bring some of the two exchanges together that are expected under this proposal at least to implement these. Bryan, do you want to go, and then maybe, Chuck, you could respond?

MR. DURKIN: Thank you, Mr. Chairman. The CME Group has taken a very strong leadership position on this whole topic, and we were delighted to be a part of this working group. And a number of the recommendations that you see in here actually piggyback off of risk management initiatives that we undertook well in advance of this working group, and we've continued to build upon it.

So we're vociferously behind the recommendations that are here, and, you know, want to assure this panel that the vast majority of the recommendations that have been contained in this document we're already either providing or we're in the process of implementing.

We did take the high road and came out and instituted these mandatory risk controls. The response that we've received has been I must say very responsive from the trading community. We put, you know, targeted dates for compliance, and we're all over every one of our clearing firms to make sure that they meet those expectations, and we have every belief that they will. However, it doesn't totally take the place of, and I think it was alluded to here, and I don't want this group to lose sight of the fact that the firms have to have their risk management facilities in place, as well. So, you know, while we're taking all of these steps, these steps, you know, are definitely very serious, meaningful backstops to the expectations that we have to also place on our firms to be doing their judicious risk management.

MR. VICE: I would just add from ICE's point of view, we run this FIA working group, as with CME, so we wholeheartedly endorse these things. We do virtually all of these already. In fact, on the pre trade checks, we've been doing that for ten years, I think we were probably the first exchange to do it. We had to do it starting in our cleared OTC markets, and then as we got in the futures business, we've maintained and enhanced that capability in those markets, as well.

So we certainly endorse these items, we're there. I think, you know, in looking forward, not just the Asian exchanges, as they mentioned, but as you start thinking about it, SEF's and other execution venues, I think all these topics we talked about today, you know, surveillance of wash trading or pre trade risk controls, you know, all of these things are going to -- there's going to be a much larger universal presumably of people that are going to have to follow what's in these suggestions.

CHAIRMAN GENSLER: You know, of course, if this new bill passes, we'll have a lot of work to do here at the Commission, and one of the things is under the new core principals for exchanges and for clearing organizations, we'll consider whether to do rules, so, you know, I'm sure we'll figure it out, but I'm just curious, would it be helpful for us to do rules in this category of direct access? Certainly the exchanges, it's terrific to take on these recommendations and do what you think, but to get, you know, the broader format of rulemaking and have the regulator step in and have rules, the SEC is doing something similar, of course, as you know.

MR. VICE: I guess my personal view would be, I think the industry does a good job now, particularly on this topic, and it's a very dynamic area, it's always changing, technology is evolving, it's not, you know, write the rule and kind of forget about it, it's another one that you would have to stay on top of all the time, as technology changed, you would have to constantly be revisiting the rules. I think the FIA and other industry groups like that do a good job of coordinating all the input.

CHAIRMAN GENSLER: But this is such an important area, technology has evolved a great deal. You can write rules that can probably have the balance with enough specificity to be meaningful, but not so specific that they're not flexible and leave, you know, you've got to get that balance right, but still, you know, to look out for the broader market dynamic. And was mentioned, some smaller exchanges might not be, you know, rising to the occasion quite as quickly as the larger ones.

MR. HARRIS: I generally don't believe that risk management controls and internal controls lend themselves to hard and fast rules. One of the things, though, that we found, we've reviewed a lot of trading losses and irregularities in a number of different firms, and what we often find is, yes, there may be problems with the adequacy of risk management and controls, but sometimes a bigger issue is management's commitment to them, and maybe that's where the

CFTC actually has a rule in ensuring that the controls that should be established are established, not mandating what those controls should be. What we often see is that management is sometimes willing to sacrifice risk management and internal controls for speed and profitability, and that very often leads to losses. So I think if there's a rule for the Commission, it may be in ensuring that whatever best practices or industry standards or recommendations are generally established by the FIA are met and implemented.

CHAIRMAN O'MALIA: Gary.

MR. DEWAAL: Yeah, I take it -- I mean I actually agree with a lot of what Doug is saying, but I'm, you know, a more practical kind of guy, and I have seen lots of piles of procedures, and obviously I've seen lots of rules in my life. My question is, well, what happens when you really do have a problem, what happens while we're waiting until the best practices gets instituted, what happens while we're waiting for the final rules to happen.

And, you know, just in my own mind, and it's interesting because we're having a change in management in my organization, we've cited these kind of conversations internally, you know, I think we all need to sort of expand our concept of what business continuity planning involves.

You know, I think we all need to think about, you know, okay, what happens when that big direct access client fails and we want to quickly do something, let's do a drill, let's try it, let's see what happens and see where we end up as an organization, because my guess is that despite really nice procedures and despite really nice best practices, we might be floundering, and it probably would be better to find that out in a test mode as opposed to a real mode.

CHAIRMAN GENSLER: If I might, I can't speak for the other Commissioners, I think this is probably a pretty darned important area that you would want, the public would want the regulator to prescribe some rules, getting the right balance, leaving enough flexibility, of course, because the only way that you get all market participants, particularly if we do move forward in this swap area, all the swap dealers, the swap execution facilities, you know, the futures exchanges which are tended to be designated contract markets, to have sort of some minimum level and consistent level of risk management around these areas is probably by a rule, you put it out, you get public comment, you get a lot of, you know, feedback, but end up with something that, you know, really has all the futures commission merchants, and the swap dealers, and the participants having some at least minimum level of consistency, but, you know, that's part of what we're going through over this next year, which will be a very consultative process.

MR. HARRIS: Let me just add that when -- one of the things I neglected to mention is that formerly I was a Senior Deputy Controller for Capital Markets at the OCC, and we issued the first guidance as to how --

MR. DEWAAL: Which OCC?

MR. HARRIS: Office of the Comptroller of the Currency. And we issued the first guidance on risk management of derivatives for banks, and we had to carefully consider at the time whether or not the guidance that we were establishing should be hard and fast rules or should be guidance.

And, in fact, we had to go towards guidance because one size just does not fit all. And risk management standards and controls at any firm needs to be flexible and needs to be tailored to the particular business of that institution, the client mix, and most importantly, risk management is dynamic, and the markets are dynamic, so you don't want to impose last year's rules and standards on firms when the market is moving and is dynamic. And I think the guidance that we've established has generally worked well for banks because it was flexible enough, it was flexible enough to be applicable not only to dealers, but small end users.

CHAIRMAN GENSLER: Yeah, you and I may

have a difference, I mean we relied on market discipline and we got into a pretty deep hole called the 2008 financial crisis, so there's a role for regulators, there's a role for the exchanges and the SRO's, there's a role, you know, so that's what we're sorting through. I just happen to be mentioning one thing. I just have one other question.

You had some very good things in the FIA report about direct access and you had these three categories of direct market access. I was just curious about the latency issues. And over at the Securities Exchange, they talk about, what's it called, naked access and sponsored access and these terms, and I get a little confused sometimes.

So I guess I'm just trying to understand, these recommendations, would the non-clearing members have the same latency issues as the clearing members? I mean is there any -- is it a level playing field that you're recommending?

MS. SUTPHEN: Yeah, that's the intention, yeah. You know, the non-clearing member concept in the U.S. Isn't -- Europe tends to have non-clearing members, the U.S. Tends to have more of a sponsored approach, where I think it's just a pricing model difference. But the idea is that all participants should have whatever microsecond latency is added by risk controls laid on them so that it's the same for everybody.

CHAIRMAN GENSLER: So the large intermediaries, the large complex financial institutions don't necessarily have an advantage --

MS. SUTPHEN: Correct.

CHAIRMAN GENSLER: -- because they happen to be a clearing member --

MS. SUTPHEN: Correct.

CHAIRMAN GENSLER: -- versus RGM or, you know, somebody else?

MS. SUTPHEN: Correct, the calculation will take place whether it's a billion contract limit or if it's a ten contract limit. The calculation that adds the latency will take place in all cases.

CHAIRMAN GENSLER: And whether you're the largest --

MS. SUTPHEN: Correct.

CHAIRMAN GENSLER: -- futures commission merchant --

MS. SUTPHEN: Yes.

CHAIRMAN GENSLER: -- or the largest investment bank or you are --

MS. SUTPHEN: Correct.

CHAIRMAN GENSLER: That's your recommendation?

MS. SUTPHEN: That's our recommendation.

CHAIRMAN O'MALIA: I think Steve had his light on first there.

MR. JOACHIM: Yeah, I think it's very important, and I think Bryan mentioned this a minute ago, to be sure that whatever we do here, that we strike a very careful balance between the obligations of each of the market participants and the exchanges responsibilities, because it's very easy for the exchange to become a crutch for the market participants.

And in pursuit of speed, algorithmic traders may drop some of the controls they need to have in place if the exchanges will catch the kinds of problems that they may encounter. I mean as a result, you could find a situation where you have some people gaining advantage by relying on the risk management principals -- controls that the exchanges put in place. So whatever rules we put in place, you need principal base, but need to carefully spell out the obligations of all the market participants in terms of what their interaction is, what controls they need to have in place, and the kinds of controls they have to have in place, but as Doug said, it can't be too specific, too narrow, or you will be in danger of being outdated pretty quickly.

CHAIRMAN O'MALIA: Doctor Kyle.

DR. KYLE: Yes, I want to make sure I understood the FIA document correctly. So I can see the advantage of the exchange performing certain risk management functions that require certain fractions of a millisecond to perform so that everybody is disadvantaged by the same fraction of a millisecond, and that would potentially maintain a level playing field.

But as I read your document, the document didn't say that it advocated a level playing field, it said that it advocated having co-location services available and available on terms that were transparent to everybody, but what is behind that is the idea that access is unequal and the exchange is going to charge you a premium for premium access, but do it in a transparent way. So I thought that the discussion about equal access should take into account that that's what we're talking about here.

MS. SUTPHEN: We're not talking about the co- location piece of this document when we're talking about everybody has the same latency, we're talking about the pre trade controls in that case. The co-location is just that preferential treatment isn't given for co- location.

Obviously, not everybody can afford co-location and we can't legislate economics, so, you know, that leads into its own complications --

DR. KYLE: Right, but it --

MS. SUTPHEN: -- but when we're talking about everybody getting the same latency, we're talking about the pre trade risk controls, not co-location.

DR. KYLE: Right, but it is a legitimate issue for potential rulemaking for the CFTC to consider whether it should even be allowed for exchanges to offer premium access or premium prices or rather to just have the same price of access for everybody, period. I don't know what the right answer is, but it's --

CHAIRMAN GENSLER: We actually have a rule on co-location that I think we published six or ten days ago, I lose track, and so we're looking for the public, hopefully anybody listening, to give comments on the rule that has -- some of those concepts right in there, so that would be very helpful to get the public's comments on it.

DR. KYLE: Right, and one other point that also goes back to wash sales is that if every order, in addition to having an account number, also had another field which indicates the ownership or control of that account, then the inadvertent wash sales can actually be caught instantaneously by the exchange as part of the clearing process, and so inadvertent wash sales shouldn't be a problem.

But in addition, if you also have that field that identifies the ownership of the account, then the exchange and even the clearing members can do a certain amount of risk management in real time, so to speak, in a manner that maintains a level playing field among participants.

So I would encourage having a field in auto- trail data and even real time order placement that identifies the ownership of accounts in situations where one entity is controlling many different accounts.

CHAIRMAN O'MALIA: Doctor Kyle, you're going to love our rulemaking.

DR. KYLE: Yeah, I know.

CHAIRMAN O'MALIA: And we'll get you a copy of both. But on Monday, the Commission just put out an ownership and control rule, so we'd like to have your comment. Mr. Secunda.

MR. SECUNDA: I would like to comment on the co-location. You know, there is a technology that's easily done very similar to what FIA just recommended about risk control. You know, clearly the speed of light isn't quite as fast as we thought it was, because being closer to an exchange has more benefits.

You know, I know one of the exchanges is actually in two buildings, and so what they have done is built a technology that makes sure that the second building across the street isn't any slower than the first building where they started.

It's clearly technically possible to draw a circle around Chicago or New York or the country, if you wanted to go that far, and say that any location you pick will have that same speed. Remember, it's not how fast it is when you're measuring microseconds, it's relative speed. So if the risk controls go in and they cost you even a millisecond, nobody cares because they cost everybody the same. The same thing could be done with co- location, that you wouldn't necessarily have to be in the same building or on the same block, you could be in the same city. And so the technical solution to these things are easy if we choose to regulate them.

The alternative, of course, is for people, especially when co-location isn't offered, where people would be fighting over real estate in the same building that the -- or the next door building that the exchange has, and whoever gets there first will have a distinct market advantage, which clearly isn't there.

CHAIRMAN O'MALIA: Doctor Gorham.

DR. GORHAM: I had a question regarding intra-day position limits, and really two questions. Is your intention to have position limits that are stricter than the ones either existing at the exchanges already or at the Commission? And the second part of the question I think is more to the exchanges and the Commission.

My belief is that even though, in theory, the position limit rules apply all the time, in fact, we typically use end of day position, large trader reporting, so I don't know that intra-day positions are actually policed. So I guess my question is right now, does anybody pay attention to intra-day positions, and are those enforced? And secondly, is your intention to go beyond that?

MS. SUTPHEN: Yeah.

CHAIRMAN GENSLER: Can I do this one? Just from the CFTC's point of view, let there not be any mistake, they are the law, it's not a theory, and they are intra-day, as well as end of day. We've recently, five of us, I mean maybe it was at staff level, but I think we all signed off on it, put out some additional language on that, I don't know if it's just technically guidance, but we recently did that, what was that, about two months ago.

Now, there's technological things both at the CME and ICE, who are here, and other exchanges, and for the CFTC to monitor it, but it's clear it's the law, we reminded people of that a couple months ago, but there is a lot of technology about actually monitoring it.

MS. SUTPHEN: Can I just clarify that those -- the position limits that are in this paper are not the CFTC position limits, they're sort of quasi-credit controls, if you will, they're intra-day limits that are based on appropriate size for the credit worthiness of the client. So they may have a relation to that, but they're generally well below that. They do not -- generally, most trading platforms have those built in, most algorithms have those kinds of things built in, it's really just to prevent unintended trading more than anything.

CHAIRMAN O'MALIA: If we could, I'd like to go back to Tom's comments about the co-location and the factor of -- to negate the issue of physical locality, and if anybody has an opinion, especially -- either the exchanges or some of these speedsters that put a premium on low latency, so if you have a thought on that.

MR. GORELICK: From my perspective, what's the most fair and practical is to have plenty of co-location space available on clear, transparent terms to allow anyone who wants to and can reasonable -- obviously, there's some cost involved in it, but from my experience, it's quite low to get into these facilities, so that anyone who's a member of the exchange, it's a very reasonable investment to make, and that's the most simple way to assure that everyone has fair access to the lowest possible connection to these exchanges.

This has been real important for my firm in the development. We're based in Austin, Texas, and we trade in markets all around the world, and because of co- location and proximity hosting, we've been able to compete on a level playing field with the local firms, and I think we need to be careful about technological solutions that would try and mimic what you get with co-location, because those are likely to be both expensive to implement and not necessarily reliable.

There would always be in that kind of an environment people jockeying for a position or trying to figure out exactly which corner of the city has the fastest connection, and while it may be technically feasible to engineer something like that, there's already a very well working and relatively modestly expensive solution to allow people into a competitive co-location facility.

MR. SECUNDA: Yeah, you know, most of these co-location facilities are not exactly at the same spots, and the technology that they employ is exactly the same technology. And I disagree wholeheartedly that right now the only person that could be a facilitator of co-location is the exchange itself.

If there was a circle driven around the exchange, if the exchange was responsible for providing the same level of service they provide to themselves in their co-location facility to other co-location facilities, it would be competition, and co-location would be cheaper, not more expensive. There is reasonableness, you know, you need to be able to be based in Texas to have co- locations. I'm just saying that there should be a competitive market for co-locations, not just each individual exchange having their own.

It's even more interesting then that when you have two exchanges in the same city or in similar locations, is that you would then be able to look at both exchanges at the same time without giving up that co-location advantage.

Right now if you're with NASDAQ and with SIAC in New York, you're in two co-locations, and the arbitrage capabilities are lessened by that, not increased. So we're not talking about anything particularly dramatic, we're just talking about the exchanges offering the same level of service to other providers that they offer to themselves.

CHAIRMAN O'MALIA: Bryan.

MR. DURKIN: Thank you, Mr. Chairman. When you're talking about co-location, I mean there are, you know, wonderful steps that we think the CFTC has taken in their proposed standards that are out there today, and we really applaud the Commission for taking the position that it appears to be taking with respect to transparency, with respect to open access, with respect to putting people on a level playing field. So those are, you know, all predicates that, you know, we have supported. And in terms of offering those services to other proximity hosting data centers, certainly that is part of our model, so that, you know, there is that capability and competition that exists.

However, I think we'd be remiss not to point out, not everybody is interested in co-location services, and there are different ways of connecting into a platform, and not everybody is as sensitive to the lowest latency way to connect to a platform.

There's different types of strategies that people utilize, and so, you know, I think you have to be careful that you continue to offer those various menus of connectivity into a platform, make it open to the public, and allow the public to choose.

CHAIRMAN O'MALIA: Any thoughts from kind of the end user community that doesn't -- that made it have access or doesn't utilize some of these higher speed co- location facilities and some of your trading strategies? Does it matter? Have you seen a difference in trade execution?

MS. BOULTWOOD: Just as an end user, it absolutely matters. And, you know, if the trading platform is larger enough, you know, it's a decision you make about the investment and technology and then the algorithmic models that you're going to make. But I also think as an end user, you know, our experience has been that you have to look at really the returns, you know, on that investment, you know, your returns on capital, and I can say that, you know, in some markets it's a toss up because of the maturity of the market whether it's really worth it at this stage given the long latency that exists, and I'm talking many commodity markets, power, and certain gas locations.

So, you know, I think the market works in the sense that firms evaluate the return on capital in the investment they're making in that technology and in the quantitative modeling, you know, that's done.

CHAIRMAN GENSLER: Constellation is both an end user and sometimes is an active market maker in electricity markets or in power markets. Do you find -- do you think many of your other electric companies would have co-location? I'm taking it that you might co-locate with --

MS. BOULTWOOD: We have co-located in gas trading, not so much in power trading. Power is still so fragmented, I mean I'm sure we'll talk about that with Matt later, but, you know, the advantages in that market, given the relative illiquidity and the fragmentation are de minimus at this point.

CHAIRMAN GENSLER: You may not know, but do you think -- I mean is it dozens of end users that are co- located in gas or is it like a handful? I mean do you have any sense of your competitors?

MS. BOULTWOOD: As an end user?

CHAIRMAN GENSLER: Yeah.

MS. BOULTWOOD: I think the majority would be. And most of our trading counterparties may not be end users, to your point, we're making markets as, you know, a fund would or other trading entities.

DR. BATES: Brenda just raised an interesting point there around fragmentation. And we've seen, you know, interested to know more, but we've seen from our customers, as algorithms become, you know, have to deal with fragmented markets, and also algorithms that are cross asset class in nature, you know, I think in your world, you know, power and gas in your world, but some, you know, dealing with equities futures, foreign exchange and the same algorithm, co-lo becomes an interesting -- sometimes a non-issue, because where do you actually put algorithm, because you've got a number of trading venues, even in the futures markets, so you know, there's -- to pick up on Tom's point, it's almost like you need really super facilities that have high or low latency connections to a number of different trading venues, and I know a number of people who put that together. But I'm interested to know how you handle that, you know.

MS. BOULTWOOD: You know, I don't think it's well handled today. And I think the, you know, the discussion has been, you know, that we've had, has been in markets that are deep, enjoy a lot of liquidity, and, you know, maybe the strategies that are perceived are, you know, singular or relatively singular, you know.

An end user, you know, whether it's -- I'm sure whether it's Constellation or Cargill, you know, it's multi commodity, multi exchange, multi region, right, and in Cargill's case, very international. So, you know, the dimensions are much different.

CHAIRMAN O'MALIA: Anyone else?

MR. SCHATZMAN: Yeah, from our perspective as an end user, primarily a resource player, a producer, the latency issue is really not a major concern. We don't participate in high frequency trading in the energy markets. We're obviously trying to execute a strategy, whether it be to hedge or to position ourselves in the marketplace, not to enter and exit the market in a high frequency way.

I think the key for us is if we want that service, we have access to it, and that there's a level playing field to access, you know, the lower latency way to get into the exchange if that's what we want, and I think that should be made available to everybody, whether you're human trading or machine trading.

CHAIRMAN O'MALIA: I think Commissioner Dunn had a question, go ahead.

COMMISSIONER DUNN: Thank you very much, Mr. Chairman. This really has been a fantastic panel. I'd like to ask Mary Ann and Leslie this -- the report came out right before the May 6th event, and I'm wondering if there was anything that they would have liked to have looked at prior to that Flash Crash that may have given us some insight as to what happened in retrospect on the report.

And then I heard someone, and it's difficult to tell who it is because there's a two or three minute delay on the streaming video to the audio that I'm getting off the telephone, but someone had said that they do know that people test their algorithms and that's one of the reasons why they're changing them every three months or so, and do you think that is something that should be reported to the Commission so that we could be aware of whether or not someone is trying to perpetrate some type of market disrupting activity?

And my final question I have is, for

those of you that do the algorithm trading, do you feel that the Commission should be privy to that algorithm and what your intentions are, and should the exchanges also have that type of knowledge?

MR. GORELICK: Commissioner, this is Richard Gorelick, I'm going to respond to your first question, which I think was directed to a comment I made earlier. The particular types of behavior that I've mentioned we've occasionally seen has generally been on the equities markets, and, you know, we do have a practice of, when we see something unusual, we report that kind of behavior to the exchanges. It's not something we've directly gone to a regulator, and I'm not sure what the, you know, what the appropriate path would be, but we have brought unusual behavior that we've seen on markets to the attention of exchanges in the past, and that seems to be at least one reasonable way to handle it.

MS. BURNS: I would say that the events of May 6th and 7th underscored what we had in the document. I would say that the controls like price banding just emphasizes the need for those controls and how well the futures industry did. And I would also say it kind of highlighted the error trade policies and why it's very important to have error trade policies that emphasize trade certainty. And maybe the exchanges have a better feel. I don't think we walked away with, oh, we should have included that risk control in the study because it wasn't -- it was something new that we didn't anticipate.

CHAIRMAN O'MALIA: Bryan.

MR. DURKIN: Just to echo Mary Ann's comments, I think it was a great demonstration of, you know, how forward thinking our industry has been on a number of these topics to have some of these controls in place. Price banding was in place, stop logic was in place, error trade policy, in which we didn't bust transactions was in place. So, you know, we build upon that, of course. There's, you know, some future iterations of things that have been outlined here, but I don't think that anything occurred during that day that would suggest that, you know, gee, we wish we had done something differently in the context of this study.

COMMISSIONER SOMMERS: I have a comment on something that was discussed a little bit earlier in regard to the next steps. In coordination with global exchanges around the world, I think it's worth mentioning that IOSCO and global regulators have been considering the direct market access issues for the last couple of years.

The Technical Committee has published a report, it's been put out for consultation, and it's my understanding that the final report should be published in the next week or so. So anyone who's interested in the thoughts of IOSCO and the direct market access issue, we should have access to that final report in the next week.

CHAIRMAN GENSLER: Were you asking about Commissioner Dunn's question?

MR. WHITMAN: I was; in regards to the question about basically reporting changes in algorithms or reporting algorithms themselves, I just think that, one, I think it would be a heavy, heavy burden for the agency to be able to collect all of that data. When you go into certain firms, I mean you go into my firm, I mean there's going to be hundreds of algorithms, and some of them are going to be changing weekly just by the nature of how many there are. I mean maybe an algorithm doesn't change for a month, but if you have 100 of them, you're going to have some that are changing regularly.

I think it would be really hard to be able to, one, be able to report those, and then, two, also be able to explain even the logic that's embedded in some of them. So from my perspective, I don't believe that that would be practical.

I did talk about the idea earlier about reporting strategy ID's, and I think a strategy ID would lend the Commission to be able to ask specific questions on an as needed basis, and we have all that data to be able to answer those kind of questions, I think that is realistic versus let's say reporting everything.

The other thing I want to add to Richard's comment, in regards to May 6th, I really feel that the futures markets really did an outstanding job of dealing with the situation, and in my view, the breakdowns have been primarily on the equity side and primarily from the standpoint that there are just so many ECN's. And I think a transparent central order book is always the best way for customers to be served. And I think our market, with the CME and ICE, are the only really two exchanges that are competing. They both do an excellent job of bringing liquidity to a, in this case, two sources, versus where in equities, when you have multiple exchanges with multiple rules, you have dark pools that are going on outside of the exchanges that people aren't even aware of, it creates a very choppy, incongruent environment that leads for a distortion.

And so I think from the futures side of things, I think that for everything that happened, I thought futures markets handled the situation well.

DR. BATES: Can I? Sorry, just one quick thing to Commissioner Dunn's comment. I made the comment about the analyst research or the three month life cycle of an algorithm, and, you know, should it -- when an algorithm becomes reverse engineered and probed by another algorithm, should it be reported. I mean I would say -- I would agree with Charles and Richard that, no, you know, because what are you going to do even if they do report, it's a free and open market. High frequency trading is the ultimate form of capitalism. So, you know, you don't want to get the CFTC into bailing out failing algorithms, you know. So I would say that's all part of the evolution of the market and part of the, you know, the economic engine.

CHAIRMAN O'MALIA: Commissioner Dunn, do you have any follow-up to any of those responses?

COMMISSIONER DUNN: No, I don't, but I did find it very interesting and feel that it's something that the Advisory Group should take a look at, and the Commission as a whole should.

CHAIRMAN GENSLER: I just had one more follow- up just as Commissioner Sommers did, too. One of the things that we're doing, and I don't know when it will hit the Federal Register, I know I'm probably doing something Scott Schneider will say I shouldn't do press announcements this way, but we're publishing a rule, we just signed off on it actually internally, we're publishing a proposed rule on business continuity and disaster recovery for both the exchanges, what we call designated contract markets, and for the clearing organizations, DCO's, so we're going to look forward to public comment on that, as well, and that's a really critical part of the market.

It's not exactly in the center of this discussion, but it's important, business continuity and disaster recovery for both exchanges and clearing organizations, which hopefully will hit the Federal Register in a few days.

CHAIRMAN O'MALIA: I'm going to put out

another question here that didn't seem to elicit much conflict in our last joint SEC/CFTC briefing, that was the issue of a minimum resting period for a bid or if there should be a cancellation, a fee for cancellation as a best practice. That debate received some heated discussion, so I'd be interested if anybody has an opinion on if there should be some sort of best practice for a minimum resting time for bids in the market or a cancellation fee. I got a much bigger response at the other --

MR. WHITMAN: I have a comment on that, and maybe the exchanges would speak to this, but the exchanges police -- I believe that that's -- if I understand your intent of that question, it's a messaging issue; is that how you're viewing it, just to be clear? Let me elaborate, maybe this will help.

So the exchanges police messaging, and so, for example, we used to run a strategy that, prior to -- as the exchanges evolved, their controls became tighter. We used to have strategies where we would constantly be replacing bids and replacing them way off the market, with the idea, if there was any kind of abhorrent behavior, it was a mean reversion strategy, you could buy it and it would come back. And the exchange frowned upon that, and there was a messaging policy that the exchange had in place that we can only submit so many messages at a time to the exchange. So in some regards, that policy seems to be effective in dealing with that behavior, that would be my take on it.

MR. GORELICK: Yeah, I would agree with Chuck on that. I think that the exchanges do a good job of policing excess messaging where currently they all have their policies of how they want to handle that.

I would also caution that any impediments that regulators or exchanges put to trading in terms of minimum times to live or extra fees or what not, that that's ultimately going to be paid by the investors in these markets, that they -- that type of efficiency speed bumps along the way do have a real cost to investors at the end of the day.

So I'd be cautious about putting them in gratuitously. I think it's important to look real closely at what the exchanges are doing already and get comfortable with the message rates that are in place today.

DR. BATES: Yeah, I think both Charles and Richard, I agree with them, it's not one for the regulator. I think it's another, you know, capitalistic thing, and it's a competitive differentiator for trading venues. You know, as Charles said, the problem is the load that continuously changing orders puts on the order book, and we've seen that, you know, spurious orders is another, you know, is another thing that can come in by accident, not just algorithms changing, which can grind things to a halt.

And it causes the exchanges to keep innovating, and, you know, and it's going to be a way for them to innovate. So I think if you just provide the ability for them to charge for it, I think it'll be extremely unpopular with everything in the market if they do, and, you know, therefore, they probably won't do it, they'll put messaging limits on time windows, and you know, so that's what I'd say.

CHAIRMAN O'MALIA: Bryan or Chuck, do you want to comment on kind of what policies you have in place today with regard to that?

MR. VICE: Yeah, I mean with regard to excess messaging, we have a volume ratio policy, I think CME has something similar, I'll let Bryan talk about it. But the general concept is, we expect you to trade a certain percent of the time that you're sending orders in rather than just sending in a lot of unfilled orders. We have different benchmarks there by market, depending on how liquid it is. The expectation may go up or down in terms of how often you ought to execute.

We have actually some pretty sophisticated aspects of the policy we haven't even implemented yet and may never implement, but have the capability to, where we actually, you know, to the extent we're going to have penalties for repeated patterns of excesses, that it actually takes into account how far away from the market a better offer is.

So, in other words, if you're far away from the market putting bids or offers in, that's going to be more punitive to you in terms of your score than if you were at the best bidder, at the best offer.

Our experience in working with virtually an entire algo community is that they are very eager for feedback from the exchanges in what they are doing wrong or inefficiently. Everyone is having to, you know, put the infrastructure in place to handle the ever increasing messaging volume just from the growth of these markets, and so nobody wants to see, you know, a lot of irrelevant information flying around. So we, you know, we haven't had to be very draconian in terms of what we've had to do, it's generally we have a lot of dialogue with them, we ask them to do different things and they, you know, we get immediate response.

MR. DURKIN: It's very consistent with what Chuck just described, and we do it on a product by product basis. We have pretty sophisticated messaging, monitoring capabilities whereby, you know, we hold our market makers to certain levels of expectation and performance, and we look very closely at the tightness of the order that they're putting in both on the bid and the offer side, and we work very collaboratively with them when they're exceeding these threshold levels.

And really, they appreciate it, because it's a cost to them in terms of how much band width messaging that they're chewing up. However, as you have folks that aren't quite complying with the expectations, you know, they do pay a penalty, so there is that aspect of the program in place, too, where we make it costly for them to exceed those levels.

CHAIRMAN GENSLER: Chuck, you used the term algo traders or algo, do you as an exchange have a sense of which traders are algorithmic traders, I mean roughly, I mean not to a science, but roughly speaking?

MR. VICE: You know, I'm basically just looking empirically of who cares about being located in the data center.

CHAIRMAN GENSLER: So you have --

MR. VICE: If you care about that, then it's probably the computer trading as opposed to a human. And I think -- just one more comment on -- if I may, on -- we were talking earlier about, you know, distance from the data center, generally I find people in one of two buckets, I mean either -- and it varies by markets.

So in Henry Hub Natural Gas, you may care about co-location, in power, you don't. But for a given market, either you care about it and you want to be as close to the matching internet as you can, or you don't care, and generally I think was the comment here, I don't mean that you want horrible performance, but in working with our customers, we find that they're a telecommunications provider, they're firewall, they're PC, they're local network, I mean there are millions of things under their own control or a third party control that puts far more latency into their round trip time than anything we're doing.

CHAIRMAN GENSLER: To the extent that you can define it, I know it's sort of a rough thing, it would be I think interesting to the Commission to know what portion of your market is either by transaction volume or orders, I mean what percentage of your market is algorithmic trading, and maybe the same question for the CME, but not something you would answer today, but if there's a way. I know it's sometimes hard to judge, but I think it would help inform us.

CHAIRMAN O'MALIA: Maybe that's another good question. As long as we're going down best practices, is there a need for reporting of who is and who is not an algo? Does it make a difference to the market? It may make a difference to some of our enforcement at some point, but does it make sense to -- in some of these -- in filing data with the Commission on a nightly basis, some of the -- should we have a box you check for, you know, is this an algo or a high frequency trader, and first of all, how do we define it?

MR. VICE: Yeah, I mean I'll leave that to the Commission. I mean we know who they are, I guess maybe to answer your question you asked earlier, I mean they have to pass a conformance test, they have to have direct access credentials, we have to give those to them, that's the only way they can -- the clearing firm obviously has to be aware of it and has to set up the pre trade risk checks for them.

So we know who the direct market access guys are, no question about that, and they have to pass a conformance test with their systems, you know, but those are the guys in the data center.

Then, you know, there's a whole gray area of people that aren't in the data center that have auto spreaders using TT auto spreaders or some other ISV auto spreader. On the Web ICE screen we have --

CHAIRMAN GENSLER: Do you want to translate that for the public?

MR. VICE: Sure, I mean it's basically automated tools that various software providers offer to our two markets, you buy one, sell the other, if the spread, you know, reaches a certain size. And then, you know, there are even kind of lower tech, there are -- ISV's provide excel links to, you know, even very, you know, low level, I would still call them algos, I mean there's not a human involved that's looking for price signals, and then when they're hit, they'll execute a trade. So it's, you know, it's -- I think when we talk about high frequency trading, it really is a spectrum there of -- and it covers a big field.

DR. BATES: I was just going to say, I think that's a good point from Chuck in terms of, you know, a broker is going to -- you might execute through your broker an execution algorithm, which is just going to minimize the market impact of a large order as opposed to a high frequency algorithm which is looking through all that data and actually being more autonomous in terms of making trading decisions. I think there's a radical difference between those two that the Commission should take into consideration.

CHAIRMAN O'MALIA: Thank you. It's 3:00, we're kind of scheduled for a break right now. Does anybody have any question -- I should have reversed that. Does anybody have a final question? No, all right. We're going to take a break right now.

(Recess)

CHAIRMAN O'MALIA: Okay. Richard, we're going to hear from you next, and then we'll go to Andrei.

MR. GORELICK: Terrific; thank you members and staff of the Commission for inviting me to participate in this important discussion. I'm pleased that the Commission has established this Technology Advisory Committee in order to solicit information from a diverse group of market participants and that the Commission has emphasized gathering empirical data to help inform its policy-making.

In connection with the recent concept released on equity market structure from the Securities and Exchange Commission, RGM and three other automated professional trading firms submitted a joint comment letter on which my comments today are based.

We also submitted an original RGM study on U.S. Equity market quality; the Commission has asked me to present the findings of that study today. The Commission has also asked me to present the high frequency trader's view of today's futures market structure. While I want to make clear that the views expressed today are my own and I do not represent any firms other than RGM, I welcome the opportunity to share my firm's perspective. I want to emphasize that I'm not opposed to new market regulation and believe that regulation needs to keep pace with today's modern markets. Nobody depends on fair, health, well regulated markets with integrity more than professional traders.

I hope to contribute to the Commission's understanding of how technology has shaped the markets that they regulate. And with that, I will go to my presentation.

So as a brief overview, professional traders have always been important to financial markets. They provide liquidity and contribute to price discovery in those markets. In recent years, as markets have become electronic, most professional trading has become automated. This is a natural and a desired development of electronic markets.

This automation benefits investors with lower transaction costs and better execution quality. Numerous studies by respected scholars and practitioners have documented this improvement. As I mentioned, we support thoughtful and empirically based regulation. In particular, we think that an appropriate and helpful role of regulators is to enforce regulation that promotes fair competition, enhances transparency, manages systemic risk, lowers cost for investors, and gives regulators the tools that they need to understand what's going on in the markets that regulate.

Now, the Flash Crash of May 6th has already received some attention today, and it did reveal market structure weaknesses that require attention. So with that, I'd like to take a few minutes before I go into my presentation to talk about the May 6th Flash Crash.

So from my firm's perspective, what was it that we experienced? We saw venues, particularly on the equity side, that were struggling to keep up with the massive amounts of trading and market data.

We saw that lots of cell orders were overwhelming the order books, and that was experienced in massively wide spreads as the bids in the market were overwhelmed. What do we think caused it? Well, it's generally an unsatisfying answer and I think that's one of the reasons why we continue to talk about the Flash Crash a couple months after the fact. It was not a fat finger, it was not a hacker, it was not an algo gone wild. A number of theories that were presented shortly after the exchange -- after the Flash Crash have not panned out. And I think what we are seeing is what we've seen in many other context before, is that complex systems like markets fail in very complex ways; they tend not to fail in a way that has a simple answer because most of the simple solutions have been thought of in advance.

We see this not only in markets, but in things like oil rigs. We see this in plane crashes, in other types of accidents of complex mission critical systems, where lots of thought has gone into how do you prevent accidents, how do you prevent problems. The result is that there's usually a cascading effect of multiple failures that were not anticipated, and I think that's the unsatisfying answer of what we experienced on May 6th.

So what was it, what were the

complicating factors that cascading on May 6th? I think it was a combination of real human selling panic over the situation in Europe, problems at venues, again, particularly on the equity side, keeping up with volumes that were going on, and that expressed itself in slow data feeds and slow response times from exchanges.

Under appreciated interactions between exchange rules, in this case what I'm talking about is that various exchanges dealt with the volatility that they were seeing in different ways, and in some ways that caused a rush to the exits among the venues that were operating normally and caused strange volume patterns that were unanticipated. And finally, there's two more points, a prudent risk management in the face of uncertainty. So what am I talking about here?

Here -- I think there's been some vilification of firms that altered their trading in light of what was going on on May 6th. And I think what we really need to think about is that there was a tremendous amount of uncertainty in the markets on May 6th.

There was the macroeconomic uncertainty of what was going on in Europe, there was a lot of uncertainty about the quality of the market data that market participants were seeing, because it was slow and was producing very unusual volatile numbers.

There was uncertainty about whether the exchanges were behaving normally, because orders were taking much longer to fill than normal on a number of venues for a variety of reasons. And there was uncertainty at a certain point about whether trades that were being made would stand. And given all that uncertainty, I think it would be a prudent behavior for most market participants to alter the way they traded. And I think that the way that people altered the way they traded in light of that uncertainty may have been a contributing factor to the events of May 6th.

Now, we could try and change that behavior by mandating certain behaviors, but I don't think it would be anyone's best interest, any market participants or otherwise to mandate that people that risky behavior that could cause them and other participants to lose lots of money. Instead of mandating behavior, I think what we need to do is, focus on reducing uncertainty. And I think a lot of the steps taken since May 6th in connection with the markets help to reduce the uncertainty during events like this.

For example, the single stock circuit breakers that have been proposed, while they are not perfect and certainly will need to evolve over time as we learn more about how they work, it is a good step to reduce the uncertainty about how far stock can fluctuate during a market malfunction like this and limit it to that -- the band around those circuit breakers.

Additionally, some of the work that's gone into more certainty about the trade breaks and when they will occur goes a long way to incenting people to stay in the market even during periods of volatility. So I think the focus from regulator should be, to the extent possible, reducing uncertainty during situations like that.

And then finally, the lack of appropriate uniform circuit breakers, and I think a lot of markets around the world have these circuit breakers. The futures markets, particular in the CME, have a variety of forms of circuit breakers, one of which that tripped on May 6th and that may have been responsible for starting the replenishment of liquidity and the rebound on the futures side. So I think that circuit breakers are another missing piece that need to be considered.

What was the aftermath of May 6th? Well, the events of May 6th were clearly unacceptable from a number of perspectives. It was not an orderly marketplace, and a disorderly marketplace discourages confidence in the markets and participation in the markets.

As a result, there have been widespread government inquiries. I think you all are familiar with most of those, but the joint SEC/CFTC panel has taken a very thoughtful approach to understanding what happened that day. There have been House and Senate hearings, and there's clearly a lot of interest from a lot of corners in what happened that day. And there's been a search for solutions that will prevent the market malfunctions that we saw while preserving the gains that we've realized in recent years from automation and competition.

Some of those include the harmonized circuit breakers that I talked about, limits on some kinds of orders like market orders or market stop orders, and consistent and predictable erroneous trade policies would go a long way towards eliminating or reducing some of the uncertainty that we experienced that day.

The events of May 6th did heighten the perception problems about automated markets and high frequency traders. And as an industry, we have even more work to do today to overcome these perception problems and get the dialogue back to a thoughtful and informed level. And that's one of the reasons why I'm happy to be here today and happy to present this paper that we recently completed, and I welcome a lot of feedback on the paper and a good discussion of what the implications are of it.

So let me get quickly into the study. So just as a little bit of a background, as I mentioned, we conducted a study as part of the comment process on the SEC's concept release on equity market structure. They had asked a number of particular questions about ways to measure volatility, ways to measure market quality, and we're really looking for empirical data to support how well the markets are doing their fundamental jobs. And we felt that as a trading firm that had access to lots of market data over the last several years, that we could provide a perspective on how the markets are performing, that we had the tools and the resources to do that, so we went ahead and internally performed a study that we entitled "Market Efficiency and Microstructure Evolution in U.S. Equity Markets, a High Frequency Perspective."

I offered that report with too much more quantitative and statistically oriented folks associated with my firm, Jeff Castura and Bob Litzenberger.

Recently, in anticipation of this meeting today, we updated some of the charts that were included in that SEC report to include the first half of 2010 and to examine some futures markets to see how some of these statistics would apply in the futures markets. And I'm happy to say that they were supporting of the findings of the initial paper, it would have certainly been a concern if they didn't. In U.S. equity markets, measures of bid ask spreads, available liquidity, and market efficiency have improved significantly over the last four and a half years. That's the period that we reviewed the data. Evidence suggests that increasing market automation and competition have led to improved market quality, and I'll talk about a number of the ways that we see that having occurred.

And the preliminary evidence that I've

reviewed in anticipation of this meeting indicates that the futures markets have been relatively efficient for the last few years, over the period that we've explored that data.

So with that, I'd like to talk a little bit about the methodology that we used in this paper. And generally speaking, we measured several market quality metrics, one was bid ask spread, another one was a metric of available liquidity that I'll describe in a little bit. In other words, general market efficiency or pricing inefficiency, which effectively measures how well the market is performing its price discovery function.

After we measure those market quality metrics, we present general trends in those metrics. I'll present some charts here today, which is a small subset of the many charts that are available in the paper. We also identified some structural changes in the market that may help to explain those trends. So first let me talk a little bit about the data that we looked at in this. So we looked at U.S. equities market data from 2006 today through the first half of 2010. We looked at one second intervals for all the data over the four and a half year period. And we looked at the inside values for NASDAQ, the New York Stock Exchange, ARCA and BATS.

We did this over 3,000 stocks, so it's a very broad universe of stocks. And to get some information about what may be contributing to some of the differences and improvements that we saw over time, we partitioned the Russell 3000 into four groups of stocks, the Russell 1000, which is the largest capped stocks, and the Russell 2000, which is mid cap and smaller capped stocks. And across those, we also partitioned them across NASDAQ listed stocks and New York Stock Exchange listed stocks.

So the first thing we looked at was big ask spreads. And I'm not going to spend a tremendous amount of time talking about bid ask spreads because I think every study that has looked at bid ask spreads has concluded that they've compressed significant over recent periods I think no matter how you look at it, but our data confirmed that. Looking from the period of 2006 through the first half of 2010, you can see a bit of a downward trend in those data, where at the beginning we were in between three and four cents a share on the Russell 1000, and at the end, we were much closer to two cents a share.

Now, you see some volatility in that period, and as you would expect during the height of the financial crisis with the most volatility, spreads were slightly wider than they were, but the trend over the period is mistakable that spreads have compressed.

What I'm showing here are absolute spreads. Rather than trying to do any waiting or adjustments to them, we did that because it's the cleanest. We also equally weighted these averages across stocks in the index. We didn't do any volatility normalization. Lots of other studies have tried to do those types of weightings and normalization, they all show the same conclusions, and in the appendix to our study, we show different ways of looking at the bid ask spread, all of which show downward sloping trends on the bid ask spread and the Russell 1000.

On the less liquid stocks, the Russell 2000, so the stocks that are mid and small capped stocks, we see wider spreads, as you would expect in these stocks, but a similar trend and similar improvement throughout the period. We looked at another metric of available liquidity, and there's lots of different ways of measuring liquidity. I was just talking to Professor Kyle briefly about some of his efforts at measuring liquidity in different ways.

We picked a way where we simply added up the size available on the venues that we were measuring on the inside at the NBBO. So we were looking at the price that was available -- at the best price available in the market. And then we took the dollar value available to trade at that price.

In order to normalize it across very

different capitalizations, we weighted these approaches to the average across the stocks in the index. As you can see here, there's albeit some choppiness in these numbers, but there has been an improvement over time in the amount of liquidity available on the inside. And I think this is in contrast to some criticism that, as we've gone to smaller pricing increments or tighter spreads, that it's illusory in some way, and that there's not the size available on the inside to trade. As spreads have narrowed, we've also seen the size available on those narrower spreads increase in the equities markets, I think that's notable. A similar story on the Russell 2000 for the less liquid stocks, again, the size available, as you'd expect on the lower capped stocks, is less, but in this case, it also tells a good story about how liquidity has improved over time.

So then I'm going to spend most of my time talking about market efficiency because I think that's an area that was sort of novel in the study and that has been less frequently examined, which is a question of how well is the market performing its price discovery function.

I'll go back and give a little history lesson of sort of the economics of how that has been thought about, but, you know, to bring people up to speed and give them some thinking about how we approach this.

So in 1965, Paul Samuelson, who's a Nobel Prize winning economist, published a seminal paper which was the proof that properly anticipated prices fluctuate randomly. And I do like the name of that paper, it's very -- almost poetic in some ways. But generally speaking, the idea here was that if a market is doing a good job of price discovery, if it's pricing things accurate, if it's difficult or impossible to predict what the next step is going to be in a market because things are priced effectively, the price stream would resemble a random walk. And he went through complex sort of mathematical proofs to show that that had to be the case. Years later, in 1998, Professors Lo and MacKinlay conducted pioneering work in this area by exploring something called variance ratio tests, and these tests measure the degree to which market prices actually do resemble a random walk.

Interestingly, in 1998, when these professors looked at the data that they were looking at, they were looking at relatively long term variance ratios, not the high frequency seconds to minutes and seconds to seconds type of data that we're going to be presenting and focusing on today, but, you know, months and days and weeks of data, and they concluded that over the time period that they were looking at, prior to 1998, notably this is a time with necessarily manual markets and a very different market structure than we have today, that the stock markets of that era were not efficient, in other words, they did not in a statically significant way -- that they statistically had non-random characteristics in the price data.

And, you know, at the risk of running this too long and getting too statistically inclined, there were further improvements in this type of study in 1993, when Chow and Denning developed a more statistically powerful test that looked at variance ratios over multiple time periods. What we've done in this paper is, we've measured both variance ratio tests and Chow/Denning tests over the recent four and a half year period for equity markets and, to an extent, for futures markets, I'll present that data as we go forward.

These tests provide a way to understand the relationship between short term volatility and longer term volatility and help to answer some of the questions that we may have about what is the impact of the increased automation of our markets and the professional trading function on short term volatility and on the prices that investors pay when they walk into our markets.

So what are variance ratios? Now, I'm going to give a disclaimer here for the more quantitatively oriented folks here. I was real happy to see that there were a number of finance professors and economists here in the room, so they could probably understand the more quantitative aspects of my paper, the formulas and that kind of thing. But I am not a quant or a statistician, so I'm going to discuss these in lay terms. So forgive me if I don't go into the depth that some of the more statistically inclined would like during this presentation, I'm happy to talk about the paper offline in more detail. So what we did is, we reviewed variance ratios of the mid point price changes over different short term sampling intervals. Again, we're looking at high frequency data to see what's the impact of our high frequency, which is why we picked very short term sampling intervals.

In the charts that I'm about to show you, a variance ratio of one is good. It implies in statistical terms that there's no serial auto correlation or no statistical trending or mean reversion. And when I first heard about serial autocorrelation, I thought it had something to do with me eating my breakfast cereal on the way to work in my car. I've subsequently understood it to mean that what it means is that prices resemble a random walk and are, therefore, properly anticipated or efficient.

We believe that such tests had not been previously applied to data samples at such high frequency rates, so we think this is sort of a novel contribution to the way that we might measure the performance of our market structure. So I'll get to some charts here. In terms of the market efficiency, what we see is that over the period we looked at, there was an improvement in the efficiency, particularly for the New York Stock Exchange list of stocks, and I think that's where the segmentation gets really interesting. This chart is of the Russell 1000, so again, the larger capped stocks. But what we saw is that at the beginning of the period, the New York Stock Exchange listed stocks were not particularly efficient by these metrics compared to the NASDAQ listed stocks, and that over time, they converged, and ultimately by the end, we see a slight, although I don't know if it's statistically meaningful, a period where the New York Stock Exchange stocks are slightly more efficient than the NASDAQ listed stocks.

It's interesting to look at what happened to the New York Stock Exchange listed stocks over this period that might account for this trend. But particularly back in 2006 and 2007, this was the introduction of Reg NMS and the New York Stock Exchange hybrid model, where they went from a floor based manual trading system to an electronic system. It was also the beginning of more exchange competition, because at that point, the New York Stock Exchange market share was about 80 percent of their stocks, and over the period of this test, they had more and more competition from other exchanges in trading those stocks. So what you see is increasing automation of this period, as well as increasing competition. Many more, from my understanding, proprietary trading firms started trading at depth the New York Stock Exchange listed stocks over this period as the markets became more electronic, more automated, more reliable for that type of strategy.

So it's reasonable to think that some of the trends of automation and competition counts for the improvement we see here in price efficiency and the price discovery function of the markets.

On the Russell 2000 stocks, again, it's at lower levels of efficiency at the end point, but you see a very similar trend where the New York Stock Exchange list of stocks improved to approximately the same levels as the New York Stock Exchange listed stocks, which suggests that as markets became more electronic and more competitive, more automated and more competitive, they also did a better job of price discovery.

We looked at this from a number of different angles, and if you're interested in the details, you can look at the paper where we had the Chow/Denning test, which is another way of viewing measures of efficiency and price discovery, and we saw very similar results in the Chow/Denning test. We also looked at multiple different time periods and intervals, all short term, and they showed very similar results, and all of those charts are available in the paper and in the appendixes to the paper.

So the results from these tests corroborate our variance ratio results, they show a significant improvement over all sets of stocks and sampling intervals, and it also shows that the higher capitalization stocks and the longer sampling intervals appear more efficient than the shorter sampling intervals and the lower capitalization stocks, but they're still somewhat efficient and have shown significant improvement.

There was a similar study from another firm that was submitted as part of the SEC comment process. This was a study conducted by Credit Suisse, and while I looked at things a bit differently, they conducted a study on related topics that they called sizing up U.S. Equity market structure. This supports the theme of the findings in our study.

Not only did they look at various liquidity and bid ask spread measures, but they also looked at something that's similar to a price efficiency measure, which is intra-day volatility, so very short term volatility normalized for longer term volatility. So how did the short term price movements that could be attributable to market structure, how did they react relative to the longer term macroeconomic types of volatility that we see in the markets? And they concluded on this point after showing a lot of substantial decline in the intra-day volatility relative to longer term volatility, that this seems to be confirmation that the new market participants are successfully finding and removing the pricing, as well as dampening volatility that might otherwise be created by large institutional orders filled during the day.

I think, you know, it's really important to look at the empirical data when evaluating some of the concerns that have been raised about automation in these markets and competition in these markets in order to evaluate which claims really deserve a regulatory response. I think it's important to regulate on the basis of empirical evidence rather than on the basis of anecdotal concerns.

So turning to a supplemental study that we conducted on the futures markets to be particularly relevant today, RGM has conducted preliminary reviews of the futures market efficiency, so primarily we're talking about variance ratio tests in anticipation of this meeting. We looked at U.S. futures symbols. In this case, we picked four symbols, ES, which is the S&P E-Mini -- 500 E-Mini contract, ZC, which is the corn contract, CL, which is a crude contract, and GC, which is a gold contract. We looked at the front months, the most liquid front months, and we used an in-house rolling algorithm to determine when trading had rolled from the front liquid month to a subsequent month.

And we looked at the period from 2006,

again, through June of 2010, and the preliminary conclusions are that for futures contracts we've reviewed, the pricing appears to have been largely efficient throughout the period. Notably, there was not a period of low efficiency early in the period that we looked at like for some of the New York Stock Exchange listed stocks.

I think that could be attributed in large part to how competitive the futures markets have been. There's long been a culture of proprietary trading firms and lots of participants competing to perform the price discovery and liquidity provision functions in the market, which is different than some of the older models on the equity side.

There is a slight uptrend apparent in several of the contracts, but as I mentioned, the starting points were much better than for the equity markets. And this is a graph of the efficiency of the prices of the four contracts that I talked about. You can see that in all events, they're pretty close to efficient, and they are pretty, you know, and where there's a trend apparent, it's a slight upward trend.

So the conclusions that we reach is that in the U.S. equity markets, measures of bid ask spreads, available liquidity and market efficiency have improved over the last four and a half years. Evidence suggests that increasing market automation and competition have led to improved market quality. The results with respect to improving market efficiency contradict some anecdotal concerns about excess short term volatility, which we were looking for in this data and it did not appear.

And preliminary evidence indicates that the futures markets that were probably most focused on in this group had been relatively efficient for the last few years.

I've provided an academic bibliography that talks about some other papers in this area that do a lot of empirical studies of various markets and the market quality there, and I think that that may be helpful for follow-up, as well.

I'm not going to read it. And I'd be happy to take your questions. Thank you.

CHAIRMAN O'MALIA: Does anybody have any questions for Richard? If not, we'll go to Andrei. You went back to 2006 in the study, did it go before that or the data you've only provided is since 2006, and why that date?

MR. GORELICK: Yeah, that was just the good quality data that we had confidence in internally. We did not go any earlier than that.

MS. BOULTWOOD: In explaining the Flash Crash, you talked about exchange rule variation, and was that only in reference to the different circuit breakers or were there other rules that you were referring to?

MR. GORELICK: Yeah, I think the different ways of looking at circuit breakers, clearly, is a big part of that. But I would also point out that one of the equities exchanges, BATS, had a very reasonable rule, which is that they would reject any order that comes in outside of a certain band away from I think the last traded price. And that I think is probably a good rule. If it were applied uniformly across the market, that might have been very helpful, but in this case, they reported to the New York Times that during a certain period of the Flash Crash, that 95 or 96 percent of the volume of the orders that were sent to them were rejected for that reason. And I think that in the period of market chaos, what that did is, it took the very reasonable rule that was not applied across the entire market and created more uncertainty about which venues would accept your orders. And I think particularly with some of the routing conventions, that the different exchanges had that -- those interactions were under anticipated, they were under appreciated prior to the events of May 6th.

MR. JOACHIM: Were you able to look at all at -- there's a lot of fear that there -- a two tiered market has developed, one for high frequency traders and one for any equity markets in particular, and one for more natural investors, let's call it, for lack of a better term.

One person could look at this analysis and say that one of the things that's taken place over the last five years is that high frequency traders have become more prevalent, therefore, when you do studies like this that look at the mean changes, actually what you're seeing is the dominance of high frequency traders, and you're not seeing the effect on the more let's call it natural traders for a moment. Did you take that into consideration, did you look at that? It's a hard thing to look at, I understand, because you can't differentiate those things, but did you think about that and the potential impacts on that?

MR. GORELICK: Yes; obviously, we don't have access to trader ID and to be able to figure out who's behind every trade, but there are some academic studies that have looked at that kind of data, and I think they've produced some very interesting results. A couple of them are mentioned in the bibliography here.

There was a study done at the Deutsche Boerse on the zetro markets by Professor Hendershott at Berkley, and what he found was that in that market, there was a period of time where traders had to self-declare themselves whether they were using an automated system or not. And during that period, he looked at that cross section of the data and concluded that the automated trading was actually much more helpful to dampening volatility, to price discovery, to tightening spreads than the non-automated activity.

So a similar result is something that was in the packet provided today, which was a study done by some research out of the New York Fed looking at the FEX markets in particular, and that's a market also where there was identifiable partitioning between the automated participants and the non-automated participants. And in that case, they also reached similar conclusions that the automated participants were very beneficial to market quality on a number of dimensions.

MR. HARRIS: Your paper seems to argue -- concludes that the increased market participation and market participants and automated trading over the last few years has increased market liquidity, but don't the events as you described them on May 6th argue that maybe automated trading has increased market volume, but not liquidity?

MR. GORELICK: Well, clearly the events of May 6th were unacceptable, it was a malfunction, and we need to make sure that that kind of thing doesn't happen again. I think the challenge is to figure out -- and by the way, looking at the -- back up one second, also looking at the SEC/CFTC joint report about preliminarily what may have caused that report, they did note that while their stories of, and certainly some participants altered their behavior and may have not been trading in the normal way that they do during that period, that there was evidence that there were a lot more liquidity being provided into the market during the period of the Flash

Crash, but that it was really being overwhelmed by the massive amounts of marketable sell orders that were coming into the market. So it was not necessarily, you know, again, this is preliminary, and I don't have any information about this different from what I've read in the SEC/CFTC joint report, but it looks like there was plenty of liquidity being provided. Liquidity is plentiful, but it's not infinite.

And in this case, there were so many sell orders that came in that it really overran what was available. The challenge from a regulatory perspective is to figure out solutions for that kind of problem, knowing that that could happen in unusual circumstances that don't threaten the gains that we've had in recent years. For investors, a better liquidity, tighter spreads, more available liquidity, and more efficient price discovery.

And I think that some of the solutions that have been proposed go a long way towards doing that, the circuit breakers, more certainty about error trade policies and what's likely to be broken and what not, that that lets us preserve some of the gains of recent years while addressing exactly the concern, the failure of the market that was on May 6th.

CHAIRMAN GENSLER: Richard, I was going to ask you something about that which you know a lot about, your firm, and a day that you've probably studied, May 6th, and the key minutes, you know, what was it, about 2:40 East Coast time to 2:45, did your firm back away?

MR. GORELICK: We continued to trade, but not in a completely normal manner. I think to trade in a completely normal manner would have been irresponsible from our perspective. So we saw, as market data started to look unreliable on various exchanges, and as order executions started to look unreliable on various exchanges, we took them out of our routing. So we stopped sending orders and relying on market data from exchanges where we thought that there was -- it was unreliable market data. That was something that we did in the minutes leading up to sort of the peak of the Flash Crash, as we identified market data and system problems at the exchanges.

CHAIRMAN GENSLER: This would be in that 2:40 to 2:45 range.

MR. GORELICK: Yeah, maybe starting slightly before that. We also, you know, put some of our models at different times and in different risk management modes where they would trade in a way that was mindful of the risk that was going on, and I think that that is --

CHAIRMAN GENSLER: Is mindful, meaning that you were widening out your risk premium, in essence?

MR. GORELICK: Not exactly; I mean the way we were looking at it was in terms of our positions, that we would be reducing our positions rather than increasing our positions in certain stocks where we thought that the market was unreliable.

CHAIRMAN GENSLER: It's a benefit of being on this Committee, but Charles, it's a day that you know a lot about, too, probably. Did you find that from 2:40 to 2:45, I mean how did you start adjusting your bids or adjusting your risk?

MR. WHITMAN: I think it's important to note that my firm does not really trade equities, we're not a high frequency trader of individual listed names, and in that regard, I think a lot of the chaos actually happened in individual listed names, not as much in the future space. We did trade through that period in the future space, we did widen out our risk parameters, which is something we do in any period of high volatility to compensate for the risks that we're assuming. And during that period, we didn't have -- like, for example, in the S&P, when the S&P had the big sell-off, we actually didn't make any trades in the big sell-off. We didn't have orders that were hit, we didn't have orders that we pursued, it was actually kind of a vacuum from our perspective, from what we saw.

CHAIRMAN GENSLER: Is that unusual, I mean you usually participate?

MR. WHITMAN: Yeah, you know, I was somewhat surprised that we didn't trade through that period.

CHAIRMAN GENSLER: Maybe just because your risk parameters, you had widened them out?

MR. WHITMAN: Yes, and also I think it also depended on -- we had various strategies that we were running. Usually I think we would have traded during that time, but we didn't actively trade it. Other associated markets that were moving violently, as well, we were trading those heavily and in the usual context of what we would trade under volatile conditions.

One of the things I had mentioned to Commissioner Chilton earlier before the meeting was, you know, one of the things I think is interesting is, all the focus is on the equity markets, but the, for example, the Japanese yen I believe that day had its biggest move in history, it was up 700 pips, and it actually preceded this. The Treasuries had violent moves to the upsides that preceded this, as well. I'm sorry, I'm getting a little bit --

CHAIRMAN GENSLER: No, no, but I think that's -- I think we've put that in the joint SEC/CFTC report, as well, so that's helpful. Can I ask one other -- Richard, you had those charts, wonderful charts about the narrowing bid ask spreads, and I guess I'm starting to wonder about this.

I, for years, thought that narrowing bid ask spreads was a sign of some health in the marketplace, and, you know, greater market efficiency and so forth, but I'm wondering if that's really indicative of what I once thought it was, just because when it's narrowing bid ask spreads, but it's only for one, you know, one contract or six contracts, and, you know, we're not in a world where this is, you know, 100 contracts up or anything like that in the futures market, and it's not, you know, it's not a world where -- the average trading size is, what, six contracts I think, roughly?

MR. GORELICK: Yeah --

CHAIRMAN GENSLER: So I'm just kind of curious how you see that, how do you measure, you know, real liquidity for size.

MR. GORELICK: Well, that's exactly what we were trying to look at with our available liquidity metric, which was, you know, followed our discussion of the bid ask spreads. So, you know, clearly, if the bid ask spreads were tightening, but at the expense of the liquidity available on the inside, then you have to use some other metric, you have to look at what is the depth adjusted bid ask spread, and, you know, there's various metrics that you can do to measure that, market impact, you know, however you want to look at that. What was interesting about the data that we presented is that as --

MR. GENSLER: And I apologize, I was wondering about the room a little because I was cold. Is there that depth adjusted thing in here?

MR. GORELICK: This does not deduct adjusted, but what it does do is, it looks at the size available on the inside. And the interesting thing is that as spreads were compressing, the size available on the inside was also increasing. So there was plentiful liquidity on -- there has been plentiful liquidity on the inside, in fact, more than there was historically as spreads have tightened, so I think that would answer the concern there. And if that was not the case, there are many other metrics that you can look at. One of the interesting things on the equity side --

CHAIRMAN GENSLER: So I guess you're saying it would be appropriate to look at things other than bid ask spread, but when you looked at those other things, you're saying, over the years, they've been -- not May 6th, but over the years, they've been indicative, as you say, there's more liquidity, and I guess your thesis of your study is that high frequency traders help in that liquidity?

MR. GORELICK: That's right. We've looked at liquidity availability from a number of different dimensions, depth adjusted, market impact, and the data that we presented here, and they all tell the same story, which is that over the last several years as markets have become more automated and more competitive, that the liquidity has improved, both the bid ask spreads have compressed, and the liquidity has improved.

And Larry Summers has a great quote which I really appreciated, which was that the closest thing that economists have to a free lunch is the compression and bid ask spread that you get in a truly competitive market. And I think he was referring to the derivatives markets and some of the benefits of taking the derivative markets into a centrally cleared competitive, exchanged shredded transparent model, and the idea being that that, you know, is a big boon and with real meaning to investors in those markets.

CHAIRMAN GENSLER: And I just had one last question because it was an earlier panel, I don't remember the gentleman to my right who said it, but said that some transactions, if it doesn't have an end user, you know, it might not, you know, ultimately -- well, I don't remember the exact quote, but Andrei keeps using this phrase internally at the CFTC about, what is it called, the hot potato index?

MR. KIRILENKO: Hot potato volume.

CHAIRMAN GENSLER: Hot potato volume, this concept that transactions that ting back and forth, I even think about tennis or ping pong, but, you know, the volley between high frequency traders, you know, six contracts moves this way and that way, and this way and that way, and this way and that way, and that's the hot potato volume, until finally some, let's say end user, some real end user finally steps in and wants to own the transaction. Do you agree that -- I guess the comment that was made earlier is that if a real money party comes in and wants to move some significant size, that's going to effect the markets; do you think that that's part of what was happening on May 6th or --

MR. GORELICK: Well, to the question of this hot potato volume, I actually think that the more times that a contract turns over, the more time that a share turns over, it generally is an indication of the health of the market, that the market is operating very efficiently where people can exchange risk.

CHAIRMAN GENSLER: Even if it's just, as Andrei would teach us, a hot potato, it's just like the -- does it really matter if I use the tennis analogy, how many times the ball goes back and forth, or is it just a matter of when it scores?

MR. GORELICK: Well, I think what the benefit of it is is to the real money investor who comes into the market --

CHAIRMAN GENSLER: But the real money investor is when it really scores, they actually hold the stock overnight --

MR. GORELICK: Exactly.

CHAIRMAN GENSLER: -- they actually hold the futures contract overnight, they have an open interest.

MR. GORELICK: Right, no, and that's

important. You know, the real question we need to be asking is, how does all this activity effect that guy who really needs to get his trades done. And I think the data that we've seen is on the equities markets and on the futures markets, that there's less market impact when they go in to trade as a result of all the professional activity, and they're being very competitive in an open market that allows a lot of participants.

The more volume there is, the easier it is to move a large block without effecting the market. You know, an example is, if I have, you know, a million dollar order in a stock that trades $100 million a day, I'll probably have some more market in back then if it's a stock that trades a billion dollars. You could do the same on the futures markets.

The more activity there is, the easier it is to execute large size without impacting the market, and we've seen that, you know, on the --

CHAIRMAN GENSLER: So your thesis is, even if it's what Andrei would call hot potato volume or what I would call just the volley back and forth, that helps the ultimate end user?

MR. GORELICK: That's right. I would think that the activity of professional traders competing, and they need to do it in a way that's economically rational to them, that accomplishes some risk management or trading objective for them so they're not -- it's not volume for volume sake, but that the competitive nature of lots of participants really helps big investors when they try to move size, because it's much easier to get in with less market impact, with less information leakage about what it is you're trying to do, as well.

CHAIRMAN O'MALIA: Matt.

MR. SCHATZMAN: Just kind of a follow-up on that. In one of the papers that the CFTC sent out for this Committee, the Rise of the Machines, the author's conclusion was that the high frequency traders tended to be highly correlated. Does that mean then that we -- there's a lot of liquidity when the markets is trading and everybody is trading the same direction, but when problems happen, the liquidity dries up perhaps faster than it did in the past? Because they're so highly correlated, they all back out at the same time, or they all drive the market one direction?

MR. GORELICK: I think in normal market conditions, that's probably not the case. My understanding is that there's, you know, lots of different types of high frequency trading strategies, that there are people who look at the markets in very different ways, and while I don't have access like the exchanges do, and they could probably talk to it a bit more to exactly how they view the activity coming in, my sense is that we all do very different things in a normal market condition.

Now, when the market is fundamentally broken, when the infrastructure and the machinery of the market breaks like it did on May 6th, then there may be a situation where lots of traders do the same thing, which is the, you know, prudent risk management thing, which is to trigger certain parameters that have them trade in a different way than they normally do.

And I think that is a proper response to uncertainty, and again, we should address the uncertainty there. Sort of the question behind the question is, how much heterogeneity or homogeneity is there among the strategies, and I think if we saw a high degree of correlation with people really doing the same thing all the time, then we wouldn't get the market efficiency results that our studied demonstrated, that what you get in market efficiency is when you've got a diversity of interest and a lot of competition and people looking at things differently, I think that goes a long way to accounting for some of the results we've seen.

CHAIRMAN GENSLER: Richard, volume and liquidity, two different words and so forth, is it correct to say volume is not necessarily liquidity?

MR. GORELICK: Yeah, I would say that

there's certain very important differences to those, that, you know, mere volume, you know, in the absence of anything else, you know, should not be a regulatory objective in and of itself. But I think generally higher volume is a sign of a healthy market that's functioning well.

I would also say that I had a very quick conversation with Professor Kyle before this and he seems to be doing some interesting work that suggests that actually mere volume is really helpful to dampening market impact. So I don't want to let the cat out of the bag on his pending studies. You know, I think there are a lot of advantages to volume, but it is important to be mindful of the distinctions between volume and liquidity, as you point out.

CHAIRMAN O'MALIA: Doctor Kyle, do you want to --

DR. KYLE: I don't want to go into my study, maybe that's for a future -- but I do want to put your research into perspective. So those variance ratio tests that you were looking at were based on one second and ten second market intervals, right?

MR. GORELICK: The ones that I presented today were, but we surveyed similar results against ten seconds versus 60 seconds or 60 seconds versus ten minutes, you know, that kind of -- much longer periods.

DR. KYLE: Right, but let's just focus on the one second to ten second. The high frequency traders might have a half life of their positions of five seconds or something, so this is highly consistent with the idea that high frequency traders are spreading a volatility out over ten seconds in a kind of even manner the way it's supposed to happen in an efficient market.

It doesn't really have anything to say about whether the overall volatility in the market over the course of a whole day is proper or not, whether it should be plus or minus five percent or plus or minus one percent. And I think that we shouldn't expect the high frequency traders whose holding period is five seconds to have any impact on volatility over the course of a whole day. So I think that your study is very consistent with the idea that high frequency traders maintain efficiency over very short periods of time in the sense of forcing prices to fluctuate randomly the way Paul Samuelson said they do, but they're probably not the ones that are responsible for whether the market is efficient over a course of a day or a week or a month. Those are going to be the hedge funds, or maybe the longer frequency traders, the pension funds, and, you know, big money, a long time holding period type of investors.

MR. GORELICK: You make a couple very good points there. And I think what we try to do by looking at short term periods in this paper and in other papers is to try and isolate some of the volatility that may be due to market structure concerns from some of the more macro level volatility that the types of trades you're talking about would be more likely to impact.

It's also a reason why we put in, in

this presentation, a reference to the Credit Suisse Report, which tries to do exactly that, which is look at the intra- day volatility versus the longer term volatility to see if those fluctuations are larger or smaller than we've historically seen, and they concluded that they had consistently gotten smaller over the last five or six years.

MR. JOACHIM: Richard, one question for you more. In terms of May 6th, you talked about lack of quality information in the equity markets. There was kind of an implied -- you may have actually said it, that the futures markets were more reliable in terms of the quality information you're getting. What did that do to your strategy and your impact? Did you trade the futures markets while you shut down the equity markets or you changed -- in the equity markets, futures markets, or I mean how did you behave in that -- during that time frame?

MR. GORELICK: Yeah, the futures markets looked much more reliable to us. You know, there was a big swing, but not to the degree that we saw in the equity markets and with the problems, and we traded relatively normally in the futures markets with very few changes.

COMMISSIONER CHILTON: I just want to make a quick comment, and if anybody has anything to reflect on with it, feel free. But in talking about high frequency and liquidity, I mean everybody -- that's sort of a really nice attribute, and it adds liquidity, and who can argue with that. But the other side of it would be, you know, we've talked about -- when we talk about, I call them massive passives, you know, the very large -- the ETF's that come in, they're for long, I call that dead liquidity in that it just stays in the market, everybody knows it's going to roll, and it just sits there, so it's not really trading until they have to roll.

And so I just wonder if anybody has any thoughts in general about, you know, either from a regulatory perspective or otherwise, whether or not looking at liquidity, sort of slicing and dicing it matters, or is it all just the same? It seems to me that this is -- we have both extremes, we have massive passives who provide liquidity, but they stay in the market for years, and we have high frequency traders who are in it for seconds, and everybody says we're adding liquidity, well, does it matter, is it the same?

MR. WHITMAN: Can I take a shot at that one? Our firm actually trades along that whole spectrum. And there's a lot of things that we trade that are two, three years out, and some of the things that we trade that far out or further, we might be literally the only firm that trades it. So when an end user wants to come in and trade it, they come to us, because we're the only ones that will price it, we trade it with them, and then we may end up owning that for months. We will have some correlation model against what we're trading that we will spread and lay off, and we try and price it in a way that we don't get killed.

And so there's -- so I feel like out

there, that gets a little bit to what you're saying, where, you know, for a firm like ours, we may end up trading thousands of contracts with an end user and then we're just stuck with it for a longer period of time. And there's a limit to how much we can trade with them. We have to be able to manage that, and obviously, that comes down to our capital requirements and our margin.

And then, you know, then there's the all the way down to the short extreme. You know, I feel like for firms like ours, I think the key component is that one of the great things about electronic trading was, if you go back to when I would trade on an exchange floor, I had a background in trading on the exchange floor, when I would trade on the exchange floor, I was limited by the one product I traded, and the one product I traded, I might have been limited not only by the one product, but by the one month that I traded of that product. When I came off the floor and I went upstairs and we started trading electronically, a whole world opened up of all kinds of different products I could trade against that one product.

And so one of the things that I feel that we have seen, and it's kind of regardless of the time spectrum, it's part of the time spectrum, maybe somebody comes in and they want to sell, you know, front month crude, they want to sell, you know, August delivery crude, and we buy that, well, we are going to sell August -- we're going to buy August crude, and we'll sell -- crude against it.

The point that I'm making is, because there's so many combinations of where we could go, the liquidity becomes an additive effect, and it becomes out in time, where I'm able to trade a lot further if something that is three years in duration because I can spread it out against two years in duration, one year in duration, six months in duration, or by product.

I could buy front month S&P's, and I could sell, you know, Russell, or I could sell Dow, or I can sell NASDAQ, and I try and price that in a way that I get -- it's a mean reversion concept I talked about, that it's mispriced and I think it will revert to a mean, in which I'll be able to take it off. And so I feel like one of the great things about electronic trading as best is, it is an additive effect of liquidity, and I can trade any one thing, where if I was just trading it on my own, in any single market, if you go back to the floor trader, the floor trader's basic trade was what we call a lien, which was, they would watch for flows, and if there's a big end user that emerges a buyer, they would really work hard to position themselves to get long ahead of the end user and then hope the end user would pay up and then sell it to them, and that's how they would make their money, okay.

You have a lot of high frequency firms that that's, in effect, what they're doing, they trying to analyze the book logic to be able to find some idea of somebody coming in to buy, whether it's a mutual fund, buy ahead of it, sell it to them.

Now, what's great is this additive piece allows there to be a lot more liquidity. If I could only do it in one product, there's only one lien, if there's only a bid for 50 contracts, I'm not going to trade 200 in front of it, because if I buy 200 and I'm wrong, I can only sell 50 and I'm stuck. But I could look across an array, and there may be 100 here, 100 here, 50 here, and 100 there, and the total is 350, and that allows me to bid 300 in front of the 50 lot and provide more liquidity to an individual market. So I think that's really a key component. And also, one other thing I'd like to add is that the study that Richard did, which I think is a very good study, and I agree with the content of it, it is based on equities. And one of the things I said earlier is, I really am a big believer in the structure of our futures markets and how well a central order book functions.

One of the things that is an issue in equities is, you have large blocks of trade that occur away in the dark that nobody is aware of, Richard doesn't even get a shot at them, and that doesn't happen in futures. And there is an effect on liquidity when large blocks trade away dark.

Now, the liquidity provider, if I'm a bank and I have a dark pool, I love that, because I can trade it all day long and I can make money and nobody even knows I'm doing it, okay. But if I do it in the central order book, that liquidity has to come out, everybody sees it, everybody has a shot at it and can execute on it. And I think that has an impact also on the study. I think some of the things of what we see would be even more -- I mean Richard's data showed this, but his data only goes back to '06. You would see similar patterns in the data if you went back to 2000 or '98. But I do think that the liquidity in futures is actually in a really good position relative to the study that was done with equities, so I wanted to add that.

CHAIRMAN O'MALIA: We do need to get on to the next presentation and we can come back to any of these discussions. But we're going to have

Andrei Kirilenko, who is our Senior Financial Economist here at the Commission since 2008, received his PhD in economics from the University of Pennsylvania, where he specialized in financial markets.

Doctor Kirilenko spent 12 years at the IMF working on global capital market issues, and his research is focused on informational properties, microstructures of securities markets. Doctor Kirilenko has also played a key role in analyzing our May 6th Flash Crash data for the Commission, has presented several concepts, you've heard hot potato and the issue of liquidity and volume that we're trying to figure out as we go forward, and we greatly appreciate his research in this area. Andrei will provide his presentation on his paper, High Frequency Traders and Asset Prices. Andrei.

MR. KIRILENKO: Committee Chairman O'Malia, Commissioners, and the Advisory Committee, it's a pleasure to be here, thank you for having me here. It's been a great discussion so far, I learned a lot. One of the comments that particularly resonated with me is a remark that Doctor Bates made, how high frequency operations or high frequency traders are akin to Russian and American submarines, you know, battling each other.

As you can see now, you have two Eastern European rocket scientists here trying to reverse engineer or reverse model what we think the high frequency traders are doing. One of them is now working for the U.S. federal government and the other working for a premier engineering institution on the West Coast.

So what -- before I begin, of course, this presentation and the views presented here are only our rocket scientist views, they do not have anything whatsoever to do with the Commission, Commissioner staff or anybody else for that matter.

This work really started quite a long time ago, not this particular paper, but we started looking into trader strategies and trader participation in electronic markets, and particular in stock index futures markets about over a year ago, and what we've seen in the data, we have the data from the entire universe, was the identities of traders transaction by transaction with lots of flags in it, the entire audit trail.

And what we've seen in this data is something that I cannot show you. I cannot show you those charts because they may reveal identities of individual traders. So the only chart you're going to see today is this, which is a chart from Google trends, one of the applications of Google.

And so if you type in high frequency trading, you will see that interest in this particular topic has increased a lot, and you can see that that happened in about 2009, which is about the time when we started looking at different trading strategies in this universe, anticipating ahead of time that this issue will come up on the -- not only on the research frontier, but also on the public policy frontier.

We probably didn't realize that things would move this fast. We have a number of research products in the works, and this is one of them. And first of all, we wanted to ask, so what is high frequency trading, and we give a definition of high frequency trading activity as something that employs extremely fast automated programs to create, route, cancel, modify, and execute the orders in electronic markets. We also could see and identify sort of how high frequency traders submit and cancel those orders. They typically begin -- day without a significant open position. And we've done a little bit of looking of how many of these high frequency trading accounts account for in our futures market marketplace and equity and other exchanges that we've seen, and they account for sometimes more than half, people say, in our markets and some contracts they account for significantly more than half.

Now, one of the questions from the regulatory and public policy perspective is, sort of what valuable services do high frequency traders provide. We're not -- I'm not against having a very small and highly efficient blackberry, you know, nobody wants to carry very large and bulky devices, but what is this, you know, liquidity, price discovery, what cost and who pays for this, who pays for the services, and how is it done?

So we desperately, desperately need theory to know where to look, because as Commissioner O'Malia said, we have a tsunami of data, and even more data is coming in let's say E-Mini contract, S&P E-Mini contract, on any given day you can have 12 -- 15,000 trading accounts, you have one to 1.2 to about one million transactions, 600,000, 700, 800, one million transactions per day, that's a lot of data, where do you look, what do you look for, and then we have the -- constructed limit order book, where do you look in the limit order book, what is it that we need to look for, how do we see this effect?

Standard market theory unfortunately is

based on human interaction, you know, human strategies and human speed, it's based -- the modeling is based on the ideas that it's humans trading with humans.

But there are also very few work -- models of limit order markets, which is one of the marketplace that we face now. So typically these market microstructure models are all designed on the idea that they're two traders meeting each other in the pit.

We don't also really know the exact strategies employed by the high frequency traders. Earlier, you know, Commissioner Dunn said, what if you told us what strategies we use, and you heard the response, you know, it's just, you know, you guys wouldn't be able to understand it, I mean it's just too much to give you. So if you ask sort of what do you do, they say, well, we're just very, very fast market makers, we provide liquidity, we make markets, this is what we do. So should we maybe just wait for this issue to go away, and, you know, things resolve themselves, and, you know, why should we look if it's so complicated?

Well, we decided maybe, no, maybe what we'd like to do is come up with a model to capture the costs and benefits of speed. What we want to model is speed. If what we're talking here about is high frequency, then we really need to understand why is it that speed matters, what benefits does it give you, and at what cost does it come to everybody else.

So we need to make assumptions on this model. So we're going to make a lot of assumptions, and the assumptions are going to be very, very restrictive. We're going to assume only two types of traders, we're going to assume a very specific strategy for high frequency trading, which is not -- which is going to be very what's called aggressive, it's not going to be passively providing liquidity, it's going to be exactly the opposite, seeking liquidity and aggressively moving it from the market. We're going to look at prices that are infinitely divisible and orders that only move in unit sizes, which is not the case in markets. We're not going to model it -- model, we don't really know if the strategies are really best responses to each other. And this is not a very dynamic model, we can't even work it out, you know, dynamically.

So did we model all the intricacies of electronic limit order markets? Absolutely not. Does this make our model totally useless? You know, we received questions like that. You know, people, your model is totally useless, and the price is -- and orders done moving the unit sizes. Well, it's the prisoner's dilemma model useless. So prisoner's dilemma model is useless if you want to describe the U.S. penitentiary system, yes, it's going to be really useless.

But what we're after here is to get to the essence of speed. What is the essence of speed? Why is this -- why does it matter so much? And we hear from the previous comments and the comments made just previously by Chuck Whitman is that it's something akin to being able to do something in front of others.

So the essence of speed, so what we do is that, we ask whether or not the speed of order submission and cancellation impact market prices, because at the end of the day, if it doesn't impact market prices, it doesn't impact volatility, who cares. You know, from market -- orderly market perspective, yes, there is a distribution of the pie, those who are faster get a slice of the pie away from those who are slower, that's fine, absolutely fine. Those who are faster should get a bigger piece of the pie. But does it matter to those who are fundamentally in this market? Does it impact prices for those who come into this market to manage risks, to accumulate positions, who are there for fundamental reasons, does it matter for them?

So we, you know, theorize, compare our model with and without high frequency traders, and we find that the presence of high frequency trading has absolutely no effect on transaction prices if distributions of buy and sell orders are the same and there is equal probability of the next order to be buy or sell. So these are very, very orderly markets, very symmetric distributions on both sides of the limit order book.

Well, what if these conditions temporarily do not hold, you know, what if the distributions that generate buy and sell orders are different, what are the probabilities of the next order being sell is higher than the buy, what would happen then? Well, our model predicts that there will be an impact on the price from high frequency traders. Is it really all that hard to imagine that these conditions will not hold? Well, let's look at -- this is the chart that's presented -- reproduce designed by the CME and reproduced in the report on the May 6th, and you can see this is the five best data offer depth for May 6th, and you see how, on the sell side of the orders, five deep dominate what's on the buy side. So one of the assumptions we have is that this book is symmetric certainly doesn't hold.

And the other one, the probability of

the next order being buy or sell also may not hold. So on those circumstances, our model would predict that high frequency trading strategies would matter, they would impact prices. These are the conditions to watch out for.

Speaking of which, should this model be used to guide policies? We don't think so. This is not a policy model, this is not a model that you can just take and say let's apply it to rulemaking. This model is to guide this work, to look for the impact of high frequency trading in the data, for what kind of strategies we need to look for or which periods of time, and whether or not they have market impact, impact on liquidity, impact on prices. This model is there to inform the debate on the impact of high frequency trading strategies. And one of the things that probably broader community, including regulators, would benefit from is some notion of what these strategies are, because without it, and it's understood that it's proprietary, capitalist and all that, without sort of a broader notion of what these strategies are and how -- there is always this fear that they could be abused, misused or create some sort of a -- clog up the plumbing of these markets in a way that wasn't anticipated.

This model is also supposed to add to our understanding on the third level of how we should model these new developments. This is not a policy model, it helps us to understand the impact of speed. And what we've learned from this, just like what we may learn from prisoner's dilemma, it's not something about prisoners, it's about that speed matters not necessarily because of high frequency traders, per se, but because of the reactions of slow traders to their presence.

And what slower traders do to disguise themselves so they are not discovered, to try to live a little bit longer in the presence of this faster guise, they trade faster, they go on symmetric, they may pull out, they may -- we exhibit strategies in our data, if you -- them, you think these people must be out of their minds, and, you know, a lot of them do generate negative

P&L, but they continue doing that, so why are they doing this? So these are sort of the situations when volatility -- when the prices would be impacted. These are the situations when volatility would be impacted. There are swings in liquidity that would be effected. So it's kind of like, you know, imagine that you're looking at the ocean and it looks beautiful, and you want to go out for a swim, what if you know that there's a big white shark out there, would that change your -- what you do or would it not?

Think of Jaws, you know, entire, you know, Jaws, the movie, that is, you know, two very different worlds. If you know that there is a shark out there, you may change what you do, and that change is what then feeds and transmits through the market.

And we'd like to understand that, we'd like to understand how exactly that impact -- how that impacts those for whom these markets are for, you know. At the end of the day, high frequency traders, market makers and others are there to intermediate among fundamental users of this marketplace. If these fundamental users disappear, go into dark pools, go in some places where there are no sharks, what's there for them to do, what's there to intermediate? And that's not what anybody wants. That's why we want to understand this a little bit better, to use this as a sort of conduit for debate. A lot of the thoughts that -- and comments that came out here before are quite interesting and quite consistent with how we sort of think different groups would react to different questions, and we hope that you find this work and what we're continue to be doing of use to you and the broader community.

CHAIRMAN O'MALIA: Thank you. That is our final presentation. Anybody have any questions for Andrei, any thoughts, any microstructure economists want to break this down? Andrei, Chairman Gensler raised the issue of the hot potato volume versus liquidity. Do you want to talk about some of the work you've done on that?

MR. KIRILENKO: Just very briefly, we will be circulating this work. In fact, right before I came here, I met with the working group that we put together to look into that, and broadly what we're doing is that, specifically looking at the events of May 6th, and based on the footprint in the data, classifying different trading accounts into high frequency traders, market makers, fundamental buyers, fundamental sellers, opportunistic traders and others, we call them noise, and then trying to see in the course of the day how their participation in the markets changed, whether or not they were liquidity providers, whether or not they were liquidity takers, whether or not, during the critical moments of the price movement, they changed their strategy from being providers of liquidity to traders of liquidity. Did they make money, and if they made money, who made money and how. Who lost money, and how did they lose money.

And one of the questions that we are trying to address is, if you look at the -- if you look at the chart of the price versus volume on that day, you will see that the volume, trade-in volume in the June -- and P500 contract specifically spiked up, at the same time as the price went down.

So what happened? Why did the volume spike up just as the price went down? We've desegregated the total volume into something that we call passive volume and aggressive volume. So for every transaction, we have an indicator. If you were there, if you submitted the order in the book first, you're passive, you're providing liquidity. If you've taken that order out, then you're aggressive, you've taken it out. And so at any point in time, you could be taking liquidity or providing liquidity depending on where you are and what the rest of the book is. The book has -- limit order book is an extremely fluid, multi dimensional object. And we found that actually if we decompose volume into -- and balance between aggressive and passive, then you can see that aggressive sell completely dominated passive sell.

So you see that those two lines move in very consistently together.

What that means is that there was a very aggressive removal of liquidity from the limit order book that culminated possibly in this event. What does it mean, aggressive removal of liquidity in marketplace? It's, you know, some of you are providers of the services and some of you are traders, it's not the market, it's you submit orders and you execute them.

So who is taking them out, and what actually happened? Typically, what we sort of seem to observe in this marketplace to be -- based on preliminary evidence we see and subject to further research, of course, is that if a fundamental trader comes in, typically a very, very fast trader takes the other side and then passes on that trade to someone who's a slower market maker, passes on that trade, who passes on that trade to someone who is an opportunistic trader who wants to hold it for maybe five minutes, two minutes, 30 minutes, waiting for momentum, and then it passes back on to market makers, passes back on sometimes to high frequency traders, until there's someone on the other side who actually wants to hold that position.

So it goes for that cycle, intermediation, sort of arbitrage cycle. And the cycle is completely fine, and this cycle is what generates price discovery, what keeps prices in line.

And what we want to see is whether or not there was a breakdown in that cycle in that, whether some particular participants who picked up that volume from someone who was fundamentally wanted to sell, and there was no on at that time to buy on the fundamental side for a minute, for two, for three, for four, what do they do with it, you know, how does it start spinning around, who ends up holding it, do we see evidence of that actually?

Because as I told you before, we see empirically that the volume is spiked up. What volume, who is trading with whom? Is that fundamental traders trading with other fundamental traders or is that fundamental traders traded with someone and then other fundamental traders are not coming in and it's just being spun around? So this is something that we're going to release in the -- hopefully the next -- the final report of the joint SEC/CFTC Advisory Committee on sort of what we see on a more desegregated basis now that we have a little bit more time including -- to look into this data and analyze it a little bit better.

CHAIRMAN O'MALIA: You had mentioned the issue of high frequency and fundamental traders. Charles, you mentioned the issue of dark pools and the fragmented markets in equities. Are there any recommendations from this Committee on things we should avoid in policy-making to prevent fracturing markets so we do not create these dark pools, opportunities for liquidity to leave the market, and also to keep fundamental price discovery and risk management responsibilities in these markets, any thoughts on that?

MR. WHITMAN: I guess the point I would make is, I think a lot of what you guys are doing is already really good and continuing to go down the route of incentivizing and encouraging people, encouraging trade to happen on exchanges in central order books is just a really good thing I think for markets and I think for market participants. You know, somebody who has a large order to execute, of course, they don't want anybody to know that, so from their standpoint, at the time they're executing the order, they don't want anybody to know, but, of course, when it flipped, they want to know everything. And I just have seen over the years, we trade a lot of stock index options and so forth, and any time things trade away, it's just I don't think good for markets.

I think it's good when everybody sees what everybody's intentions are and then you can deal with it. So anything that continues to incentivize that I think is good policy.

MR. HARRIS: Not a thought on what the

regulation should be, but certainly on what the challenges would be, and that is actually defining what high frequency trading is if you try to put it in a room.

CHAIRMAN O'MALIA: Well, let's -- as we begin to wrap this up, the debate today has been about best practices and trying to figure out where we go with these. FIA presented us with a list of their best practices and solutions, many of which the exchanges are implementing, and if I could ask -- I meant to ask this earlier, if CME and ICE could help us understand where we are in implementing those recommendations, not real elaborate, just give us an update on each of those to understand, and I think we'll circulate that to the Committee so you all have a better understanding of where that stands, and we can provide any background on our co- location and ownership and control rules that are out for comment right now. But I would like to get some discussion before we close here on the best practices and where we take this, what is the next step for this. Do we leave it at the FIA? I know staff in this building are thinking about different rules and regulations.

We have the Financial Reform Package that is likely to pass the Senate this week, so we will begin to implement that. So we have things in terms of new market manipulation standards that we're going to have to look at and implement rules around.

And I think maybe the next best step is to have some of our staff provide some outlines on some of these rulemakings so you can look at some of the -- matching up some of the rulemakings with some of the best practice discussions we've had here today and to develop the next step would be to kind of understand where those come together.

And I'm thinking of developing a subcommittee out of this to really focus on that and then report back at the next meeting. But I would like to open any discussion up today, right now, for any reflections on the FIA and thoughts going forward and what we should think about.

Doctor Bates.

DR. BATES: Yes, I mean I thought the FIA's document was pretty well considered and sensible, you know. I mean we discussed the wash trades, which I thought was, you know -- mission, but generally I thought it was pretty sensible. I mean just to pick up on some things additionally we may want to talk about, and particularly with your comment on fragmentation, I agree with Charles, you don't want to create dark pools, but I think fragmentation, as we've seen in other asset classes, and seen in FEX, for example, is natural, and then there will be some consolidation.

You know, fragmentation consolidation is natural. I think it's possible to -- for firms to manage that with sort of liquidity aggregation, and, you know, they can deal with that, and I think it's a positive, you know, for the market.

But I would encourage the CFTC to look at, for example, in fragmented markets, and all regulators, consistent circuit breakers, for example, across markets. Richard raised the point about what happens if one set trigger and another set don't, liquidity will move around, and the problem will just be pushed around, I think that's one topic. And then market surveillance potentially, you know, more real time market surveillance in institutions themselves to monitor their own systems, you know, more consistent across exchanges and trading venues, and possibly even the regulator having more, you know, real time market surveillance themselves. I mean I'm throwing things out there, there's probably lots more, but that's some thought.

MS. BOULTWOOD: So another way to frame this is, you know, the FIA addresses, you know, that relationship between the participant and the exchange. Some of the other issues we've heard about is just best practices between the exchanges themselves. And, you know, I thought Richard gave a great overview of some potential causes of the Flash Crash, and, you know, attributing some of them to the lack of standards, you know, in the way we were, you know, the exchanges treated an environment, a stress environment.

And so perhaps some best practices across exchanges that would address, you know, some of the fragmentation, you know, whether it's equity exchange to equity exchange, or, you know, equity to other type security exchange or commodities, because they are all interlinked.

DR. BATES: I think that's interesting. Just to add to that, I went to a recent event that was associated with the -- it was just before the SIFMA show in New York, and it was, you know, a TABB group forum and they were discussing some of this, and some of the traders there were saying that, you know, if you just look at the futures market, it might look like I'm abusing the market with my trades, but actually I'm also trading on the equities market with a multi asset strategy, and you need to see across both to be able to actually see the full picture.

And that's a challenge for the CFTC because multi asset class strategies are a challenge because you've got two regulations there, and I just think, you know, and some things which are unregulated, like FEX, as well, so that's something which needs to be tackled and discussed I think.

COMMISSIONER SOMMERS: I have a question for Mary Ann on timing. The survey that you discussed as a next step for global exchanges you intend to send out in August, but when do you expect to have results?

MS. BURNS: One of the reasons we have conferences is, they set deadlines for getting things done, like we used the Boca Conference to get these risk management recommendations done, so we're hoping to publish them at Expo, which is the first week of November.

CHAIRMAN O'MALIA: The FIA recommendations largely put it on the exchange and put the standardization there. Are there any ideas or concepts that came up in some of your discussions about applying certain pre trade controls to the FCM or other market participants that direct through?

MS. BURNS: At the beginning of the study, I think we outlined some of the pre-trade risk controls that trading firms naturally put in place to protect themselves against events. The FIA Principal Traders Group is looking at tackling those recommendations that we started in the study and making best practices for trading firms.

FCM's -- the reason that we put the exchange controls at the exchange level is because we don't want risk control to become a point of negotiation between a clearing firm and its trading firm, so that's the main reason. But those risk controls, some of the very same risk controls already exist in FCM's and trading firms.

MR. DURKIN: We require it.

MS. SUTPHEN: Correct, and just to add to what Mary Ann said, speaking as someone who works for an FCM, those controls are in place, they have been for years. Even when we clear a firm like Richard's, for example, we require them to have those controls, and, in fact, we require to have access to his controls.

The problem is that we have thousands of users, hundreds of platforms, which are all completely not standardized, which becomes quite a nightmare to implement. And the feeling is that if you can bring that down to a lower denominator, it'll be more effective and easier to automate.

MR. HARRIS: Those pre-trade controls have existed for years, but we also know of situations over the last few years where they failed, or they haven't been implemented properly, and I think -- my only concern with the FIA recommendations, which I also think are very well considered and very good, is that they not take the emphasis in the first instance on the FCM's and the traders for their own risk management.

MS. SUTPHEN: Just to be clear, the risk levels are set by the FCM. We're just talking about putting the tools at the exchange level, not having the exchanges set the actual risk levels.

CHAIRMAN O'MALIA: Go ahead, Doctor Kyle.

DR. KYLE: I think when it comes to these kind of risk management sorts of things, one of the important issues that you need to think about are the data standards, because there needs to be reporting, there needs to be reporting from the customers to their FCM's, there needs to be reporting from the FCM's to the exchanges, there needs to be reporting from the exchanges to the CFTC, and if all of that reporting can be done using data standard formats that are easy for everybody to use and understand, especially when you're collecting information from multiple sources, it will make the world function better.

And one particular point to keep in mind is that you can tell the customers that they need to be sophisticated and do their own risk management and understand what they're doing, but one way to enforce that is to have the customers themselves send data along with their trades that indicates that they are thinking about what they're doing, you know, for example, maybe some risk management parameters that have been well defined need to kind of go along with the trades so that -- and the customers need to put that information in there so that the FCM's get it and the CME gets it and the CFTC gets it, and then at all the different levels, you can look back to the customer and have some sense of whether the customer actually understands what they're doing.

CHAIRMAN O'MALIA: Any further thoughts?

COMMISSIONER CHILTON: I just have one, and maybe a little question. I just want to thank you, Mr. Chairman, for holding this meeting and your staff for doing all this great work. We've tended to have really informative advisory committees. Jill has had a good one, I've had a good one, Mike has a good one all the time.

But a lot of times in government, these things can be dog and pony shows. And, you know, I said at the beginning I wanted to learn, going so fast, we need to learn, and I've learned a lot. And one of the things, just one quick question on it that I just -- this thing that I raised earlier about algos on algos, I actually am a little bit surprised by the response from John and Richard, and you know, it makes me think that we certainly don't want to throw out the baby with the bath water, you know, we don't want to just say -- have people saying, you know, algos are bad or flash is bad, and if there are algo price pirates out there trying to take advantage of these systems, it's a real sort of a new enforcement regime for us to look at, and so I am curious, and maybe Mr. Cosgrove, maybe you have a thought on this, on where we should be going, how do we look at these things, because this is really something.

I just got out of this meeting today, which I find really interesting and helpful, and a little bit daunting, to be frank with you all.

MR. COSGROVE: Well, I became aware of a paper just yesterday that was produced by a group called NANEX, and it's photocopied and handed out to everyone this afternoon. I had intended to, if I had a little more time, to send this in.

I didn't author this work and I don't know these guys, but I read the paper, and I was fascinated, because I've been in energy and commodity markets for nearly 30 years, and I've certainly seen many variations of gaming of various markets, and I've been trying to figure out for the last week or so how you can game a market using high frequency trading, notwithstanding the flash business, which I think is a separate issue. And in this NANEX paper, they've highlighted something that they call "stuffing fingerprints," where someone appears to be generating a high degree of orders that they explain as quite probably meant to jam up competing algorithmic traders. And so they essentially generate a large volume of orders and then program their own algorithms to disregard those orders so that they can process the normal market information, but at the same time, those who don't have that information are now processing an enormous amount of spurious information that does nothing but slow them down.

And so there is -- I mean if you look at this, I think it's fascinating, they name some great names like Bayonet and Crystal Pyramid and so forth. And if this, in fact, true, then I think somebody ought to find out exactly who generated this and get an explanation of why, because I mean, clearly, this isn't metaphysical, somebody produced those, and it's possible to find out who it is, and I'd love to find out who it is and sit them down and say, what is this and what's the commercial purpose.

And I think that, if nothing else, it would scare the heck out of people who might otherwise be tempted to promulgate those kinds of strategies. So this is the first example that I've seen, you know, where it was something other than the kind of extension of behavior that you would see with locals who are going to go run through stops on a quiet afternoon, or, you know, spoof some guy across the ring who is short and sweating, and this is the first thing that I've seen that seems to be more than a simple extension of the kind of stuff that we've seen in the rings for 30 years.

So I think -- if we don't find out who did that, I think it's one of the biggest crimes of the year. I mean somebody did that, let's see who it is and ask them why they did it.

CHAIRMAN O'MALIA: Andrei, do you want to speak to that?

MR. KIRILENKO: NANEX representatives who were here left Thursday, they presented their views to -- in this very room, a room full of our enforcement, surveillance and economist staff, and staff from the Securities and Exchange Commission. We're taking their research very, very seriously. They provided us with all the data that they have on this day. We are supplementing this data with the identities data, and the SEC is doing the same. We're looking into it very, very seriously, I should assure you.

MR. COSGROVE: I'd love to know what you find out.

MR. KIRILENKO: It might be a federal felony for me to tell you.

MR. COSGROVE: We'll talk about it

later.

MR. GORELICK: Yeah, I would just agree with those comments. I mean if someone was doing that for a manipulative purpose, then there should be an enforcement action.

MR. COSGROVE: Yeah, let's go get them.

CHAIRMAN O'MALIA: Doctor Kyle.

DR. KYLE: Yeah, let me issue maybe a warning to kind of tread lightly, and I'm not speaking about this particular instance, but I want to refer to something that's in the academic literature, that basically treats trading as a game and applies techniques of game theory to trading, so you can think of it as treats trading like poker.

And, of course, my optimal strategy in playing poker depends on what I think your strategy is, and your strategy depends on what you think my strategy is, and you can iterate that to what we call a nash equilibrium, and you can ask what do nash equilibrium strategies look like. And there's one paper out there that I think is a really interesting paper, but let me give you the intuition about it. The intuition about it is that there's some traders that kind of want to be buyers, and maybe they want to buy a lot because they have good information, and that, to me, seems like a legitimate reason to want to buy a lot.

But the way the market works is that you kind of have to chop it up and it's kind of by assumption, and maybe one contract at a time into small lots. And so if all you do is just continuously buy these small lots, the other people in the market, which we can think of as the high frequency or algorithmic traders, are going to catch on to what you're doing, and the game they're going to play is, they're going to jump ahead of you when they see you buying it and buy more quickly than you can buy and then hold out for a higher price at which they sell to you.

So what this papers shows is that the way that the traders protect themselves is, even though they want to buy, they start throwing in some sell orders, and they throw in some sell orders, I like to think of it as they're keeping the market honest, so the algorithmic traders now can't really tell what they're doing because they're mixing it up just enough to keep the algorithmic traders honest. So some people might look at selling and I really want to buy as some kind of market manipulation or price manipulation or something illegitimate, but another way to look at it is that it's a strategy that's almost necessary for a large trader to employ to protect themselves against trading ahead or front running, not in the legal sense, but in kind of the euphemistic sense by high frequency traders that are trying to position themselves ahead of where the market is going.

So I guess I would like additional warning, if you think of markets as a game and you're trying to guess what the other guy is doing as part of the winning the game, mixing things up a little bit is probably a legitimate way to keep people honest.

But, on the other hand, you know,

creating a lot of fictitious volume or doing something almost like a denial of service attack against an exchange, you know, that would be something that you would want to prohibit and punish pretty severely.

So my point is, you have to think real carefully about what should be permitted and what shouldn't be. Certain things that keep other people honest should be permitted, but other things shouldn't be. And it's a very complicated question, a very interesting one.

CHAIRMAN O'MALIA: Well, if you would like to submit that paper, that reminds me, we have -- our web site to collect this data, collect the papers, and to inform the Commission and the Committee about different thoughts you all have on this type of research that we're looking at, best practices and the other topics we're going to be addressing, you can send those to * HYPERLINK "mailto:techadvisory@CFTC.gov" **techadvisory@CFTC.gov*, and we'll post them all, and all of this data is going to be available for everyone else. Commissioner Dunn, do you have a final comment or question?

COMMISSIONER DUNN: Yes, Mr. Chairman, and thank you very much for putting together this very informative meeting. I think we've got some great suggestions out of this, and the first and foremost one that caught my attention was putting together some definitions that everyone can agree upon we're working with, and I think we ought to start with that.

But in this day and age, when the exchanges and many of the traders are spending hundreds of millions of dollars on their technology and strategy, recruiting the best minds from MIT, I feel a bit like David and Goliath at the CFTC. And we are hoping to get some additional monies from Congress to implement the Financial Reform Package if and when it goes through. But I would look to this Advisory Group to help us to optimize those very pitiful funds that we do have so that we can get the biggest bang for the buck with what we've got. And I would certainly in the future like to get some of those types of recommendations from this group. But again, this has been just tremendous. Mr. Chairman, thank you for putting us on, and thank all of the participants.

CHAIRMAN O'MALIA: Thank you very much. It is my intention to request that we put together a subcommittee of this full Committee to consider the best practices discussed today, what should be implemented, how should we enforce it. And then at our next Committee meeting in October, the Commission will focus on technology issues related to implementing the Dodd-Frank Financial Reform Bill.

Not only the Commission will be charged with establishing the rules for brand new entities such as swap execution facilities and trade repositories, but the Commission will need to make significant investments to improve its own surveillance capabilities, including massive storage data. The Committee's input will be invaluable in identifying and resolving technology related challenges in the reporting, collection and timely dissemination of data going forward. And I think, from what I've heard today regarding the consistency, clarity and some flexibility in applying these standards and applying them across all markets, mirroring some of these -- working further definitions and thoughts on best practices and then having -- mirroring that with the discussion we're going to have on these new technology items and the integration of the OTC markets, I think will be very helpful at our next meeting in October.

And so I would like to follow up with any recommendations from the Committee on high frequency trading best practices, and with that, I think we're at an end, and I appreciate everyone's participation, making time to come to Washington, participate by phone or otherwise, and also making the contribution of papers, that's been very helpful to us, as well. So thank you very much, and this is adjourned.

(Whereupon, at 5:03 p.m., the

PROCEEDINGS were adjourned.)

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I, Carleton J. Anderson, III do hereby certify that the forgoing electronic file when originally transmitted was reduced to text at my direction; that said transcript is a true record of the proceedings therein referenced; that I am neither counsel for, related to, nor employed by any of the parties to the action in which these proceedings were taken; and, furthermore, that I am neither 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.

/s/Carleton J. Anderson, III

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