THE UNITED STATES SECURITIES AND EXCHANGE COMMISSION

ROUNDTABLE ON MARKET DATA PRODUCTS, MARKET ACCESS SERVICES, AND THEIR ASSOCIATED FEES

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U.S. Securities and Exchange Commission

100 F Street, N.E.

Washington, D.C.

PARTICIPANTS:

SEC Participants:
Jay Clayton, Commission Chair
Yue Ding
Mark Donohue
Dan Gray
Hans Heidle
Robert Jackson, Jr.
Hester Peirce
Brett Redfearn
John Roeser
Elad Roisman
David Shillman
Kara Stein

Panel Four:
Robert Bartlett
Michael Blaugrund
Isaac Chang
Adam Nunes
Paul O'Donnell
Dominick Paniscotti
Jarrod Yuster

PARTICIPANTS(CONT.):

Panel Five:
Kevin Cronin
Hubert de Jesus
Bryan Harkins
Emily Kasparov
Richard Ketchum
Michael Masone
John Ramsay

Panel Six:
Greg Babyak
Adrian Facini
Bradley Jonas
Marcy Pike
Brian Schell
Larry Tabb
John Yetter

PARTICIPANTS(CONT.):

Panel Seven:
Kevin Carrai
Bill Conti
Jeff Davis
Tyler Gellasch
Melissa Hinmon
Anthony Masso
Rich Steiner

C O N T E N T S

P R O C E E D I N G S

MR. REDFEARN: So good morning, and welcome back to the Securities and Exchange Commission staff's Roundtable on Market Data and Market Access. I'm Brett Redfearn, Director of the Division of Trading and Markets, and I'll be moderating the first panel today.

I also want to introduce my colleagues and panel moderators here with me, alongside of me. So Dave Shillman and John Roeser, both Associate Directors in the Office of Market Supervision within TM; Dan Gray and Yue Ding, both Senior Special Counsels, also in the Office of Market Supervision; Mark Donohue, Senior Policy Advisor in the Office of Analytics and Research; and Hans Heidle from the Division of Economic and Risk Analysis.

I would also like to welcome back the various Commissioners, who, if they're not here and present, they are very likely watching by webcast and multi-tasking, or will certainly be catching up on all of this later.

So, before I start, I want to provide our standard disclaimer that the views that the staff and I express today are our own, and do not necessarily reflect the views of the Commission, the chairman, the commissioners, or other members of the staff.

So, for those of you who are here, and those who participated as panelists yesterday, as well as all

of you here today, thank you very much for your engagement in this important discussion on U.S. equity markets. Yesterday we covered a lot of ground and many issues were raised, and we received a significant number of very constructive suggestions as to how we can potentially improve the core market data infrastructure in U.S. equity markets.

Today we intend to pick up on the issues and challenges raised, and explore potential policy solutions that might be warranted. Along those lines, our theme for today is TGIF, not just because we're thankful it's Friday, but because TGIF is the acronym we are using to categorize four substantive policy areas that we will be covering today.

T will be for transparency. Yesterday several panelists suggested that transparency is necessary for evaluating market data and market access fees as we continue to meet our statutory mandate of ensuring that these are fair, reasonable, and not unreasonably discriminatory. Today we would like to discuss where there could be additional public disclosure to help evaluate such fees.

G is for governance. Questions around SIP governance came up during yesterday's discussion, including the voting structure of the NMS plans that run

our core infrastructure today, which are the SIPs. Today we will discuss potential steps to improve the governance of core data infrastructure, which may include addressing conflicts of interest, confidentiality policies, use of executive sessions, and voting structure.

And, as a reminder, for today's discussion, when we use the term "core data infrastructure," it's intended to refer to the market data products and access services that market participants need to trade effectively in today's market structure, which may go beyond the products and services currently offered by the SIPs.

I is for infrastructure. Yesterday several panelists provided their views on the content and latency differentials between SIP data and exchanged proprietary data. Today we will further explore what should constitute core data infrastructure and the potential steps to modernize core data infrastructure. And that will be our first panel in just a moment.

F is for funding. Several panelists provided views yesterday on how we should evaluate whether the price for market data and market access is fair, reasonable, and not unreasonably discriminatory. Today we would like to discuss potential steps to assure that a modernized core data infrastructure is appropriately

funded, and that the associated fees satisfy the applicable regulatory standards. And that assessment may include a discussion about associated competitive forces, or the lack thereof.

So, with that, let's kick off the first panel of the day. Panel four, again, will focus on potential steps to modernize the infrastructure for providing the market data products and market access services that market participants need to trade effectively in today's market structure, which includes how we think about core data and core access.

So, I'm going to ask our panelists to briefly introduce themselves, their name, their organization, role. We're not going to do long introductory remarks today, so keep it very short. And then we will move on to some of our specific questions and discussions.

So, Professor Bartlett, why don't we start with you?

MR. BARTLETT: Yes, I'm Professor Robert Bartlett at UC Berkeley. My research interests include capital markets and market microstructure.

MR. BLAUGRUND: Good morning. Michael Blaugrund, head of transactions at NYSE.

MR. CHANG: Hi. Isaac Chang, managing director and co-head of trading at AQR Capital Management. AQR is a systematic asset management firm. Manage roughly 225 billion in AUM, roughly half of which is traditional long only, and half which could be considered alternatives.

MR. NUNES: Adam Nunes, head of business development at Hudson River Trading, which is a market-making and proprietary trading firm.

MR. O'DONNELL: Paul O'Donnell, managing director in Morgan Stanley's electronic trading group. As you probably know, Morgan Stanley is a large financial institution, and we service Main Street in a variety of ways. In my particular area, it's through providing equity executions to both institutional and retail investors through our retail affiliate arm.

One note for my colleagues on the SIP operating committee: angry Paul stayed home; this is happy Paul today.

(Laughter.)

MR: PANISCOTTI: Dom Paniscotti, VP enterprise architecture at NASDAQ. Prior to that I ran -- I was head of infrastructure for a large market-maker, electronic market-maker. And so, hopefully, I bring a bit of perspective to the panel, as I'm probably one of the only panelists who's actually gone to all of these data centers and pulled the fiber that Doug showed you yesterday on the dais.

MR. YUSTER: There we go. Thank you, Brett. It's a pleasure to be here today.

My name is Jarrod Yuster. I'm the CEO and founder of PICO. We provide infrastructure hosting, exchanging network connectivity, and data services to our clients. Our clients include global banks, broker-dealers, systematic trading firms, exchanges, as well as other financial technology vendors. Our clients are -- include a wide variety of profiles for consuming data.

So it's a pleasure to be here. Thank you.

MR. REDFEARN: Okay, thank you all very much, and thanks again for being here.

So today we're going to have Yue Ding, who is a senior special counsel in the office of market supervision, provide a framework for the panel discussion, and just sort of outline some of the, you know, sort of content and latency differentials that we will be contemplating when we think about SIP data and exchanged proprietary data.

So, Yue, over to you.

MS. DING: Thank you, Brett. And welcome to our panelists. So this panel will be focused on core data infrastructure. And as Brett just mentioned, for purposes of this discussion, core data infrastructure would encompass the market data products and market

access services that market participants feel that they need in order to effectively participate in today's marketplace.

As we heard from yesterday's panels, there is currently an array of latency and content differentials between SIP data and exchanged proprietary data. As discussed during yesterday's session, one aspect of latency differential is the time it takes for each participant exchange to transmit data to the SIPs and for receiving data from the SIPs. And that's because the SIP is physically located in just one place, while the various exchanges are located among several different data centers.

And as an example, for a data recipient located in Carteret, the information about quotes and trades on NASDAQ for NYSE-listed securities would have to travel from NASDAQ's data center in Carteret to the tape A processor at Mahwah, and then back to the recipient in Carteret. And it was mentioned yesterday the Carteret-to-Mahwah geographic hop currently takes approximately 350 micro-seconds by fiber optic cable, which is used for SIP data transmission.

The processing of consolidated information and the calculation of the NBBO by the SIPs also takes time, although technology upgrades in recent years have

significantly reduced SIP processing time. The average processing time is under 20 microseconds for tape C securities, which is the NASDAQ list of securities, and about 130 to 150 microseconds for NYSE and other exchange-listed securities. And so those are the tape A and tape B securities.

As the panelists discussed yesterday, another aspect of the latency differential between SIP data and exchanged proprietary data is associated with the various connectivity options. Exchanges currently offer various types of high-speed connectivity options that are used in the proprietary data space, but not used in the SIP space.

For example, exchanges offer fiber and wireless connectivity between data centers. And as we heard yesterday, wireless connections can be 40 to 50 percent faster than fiber connections, although fiber may be more reliable overall, and less susceptible to weather conditions.

As noted yesterday, data is transmitted to the SIPs through fiber. And even though fiber connectivity may be a more reliable option than wireless connectivity, a combination of fiber and wireless connectivity could be a faster alternative for transmitting SIP data.

Another aspect of latency differential is associated with a different bandwidth and switches provided for connectivity. A larger bandwidth -- for example, a 40 gigabit connection -- could be important for a participant that has a greater message traffic and consumes a large amount of data. And a low latency switch provides for faster processing of orders that have been sent to the switch.

And it's also worth noting that once a market participant has physical connection to an exchange, they must also have logical connection to the exchange.

And exchanges offer various types of logical connections with different functionalities. For example, for trading and for receiving market data, and they may also have different latencies.

Finally, as discussed yesterday, while certain information is included in both SIP data and exchanged proprietary data -- for example, the best bid and offer and last sale information -- the exchange's proprietary data products include certain information that is not included in SIP data, and that includes quotations, depth of book data, auction imbalance information.

As the panelists discussed yesterday, some of this information could be necessary or very important to market participants. As an example, there are many occasions during which odd lots at the best bidder offer

on a direct feed and they represent a better best bidder offer than the SIP NBBO, and this could be more often in high-priced securities, where there is more frequently an inside odd lot market that's not visible in the SIP data.

The content differential between SIP data and exchanged proprietary data run both ways. There are a number of areas where SIP includes information that's not in the exchanged proprietary data, such as regulatory and administrative messages. For example, the limit up-limit down price bands. And generally, these differences mean that, despite the potential limitations, SIP data is often a product that market participants must purchase.

So for this panel we will be discussing the elements of core data infrastructure. Given the various differentials among market data and market connectivity offerings today, we would like to hear the panelists' views on what market data products and what market access services participants feel that they need to effectively participate in today's marketplace.

We would also like to hear the panelists' views on whether the current SIP infrastructure, both in terms of speed and content, is adequate for core market data infrastructure, or should the SIPs be improved or replaced in order to meet the minimum requirements of modernized core data and core infrastructure.

And with that, I'll turn it back to Brett.

MR. REDFEARN: Thank you, Yue. So today, what we want to do to start is we're going to have a few brief presentations on some of the specific alternatives that have been discussed so far.

So, as many of you would know, these things have been around for a while. There have been various discussions. We're going to have Michael Blaugrund from NYSE talk about the distributed SIP concept. This was -- also came up yesterday.

Paul O'Donnell from Morgan Stanley is going to be talking a bit about sort of what's known as the competing market data aggregator model.

And then Adam Nunes is going to walk us through what I think he would refer to as the one fee, one speed proposal.

And then we're going to sort of build from there with various sort of commentary on some of these different elements.

So, with that, Michael, let's start with you.

MR. BLAUGRUND: All right, thank you. As I said before, my name is Michael Blaugrund from NYSE. I also have the privilege of serving as the chair of the distributed SIP subcommittee of the SIP operating committee, which -- I believe I'm the first to hold that

title.

The subcommittee was formed two years ago. And while we haven't made a formal recommendation to the operating committee, a lot of what I'm going to discuss has been, you know, sort of formulated in those discussions. So all of the good ideas are from the advisors; any bad ideas are my own.

That was a nod to you, Paul.

(Laughter.)

MR. BLAUGRUND: You know, any change to the SIP's design would have significant implications and costs for the industry, and merit a truly robust cost benefit analysis. But speaking, you know, today, based on what we know, we think that a distributed SIP implementation of the existing processors would be the simplest, least costly approach for the industry to minimize delays when consolidated data and single market proprietary data are received in distant data centers.

In the distributed SIP model, SIAC and NASDAQ UTP would establish instances of their systems in multiple data centers -- namely Mahwah, Carteret, Secaucus, and Chicago. Exchanges would simultaneously broadcast their quote and trade updates to each SIP instance. And data recipients could consume consolidated data for tapes A, B, and C securities from one or more of the SIP locations.

As a result, market data would never have to travel more than one hop before it would be available to a recipient in any major data center. Each instance of the SIP would operate in parallel, consuming quote and trade data directly from the participants, but independently consolidating the data, and republishing it to recipients.

To limit complexity, we recommend that regulatory messages like limit up-limit down price bans, be calculated by only one SIP instance, probably the SIP instance located in the listing exchange's data center, and then republished by the other SIP instances.

And in this model, a recipient that wished to continue using the existing SIP sources without making any changes would be free to do so, while others could choose to consume all three tapes' consolidated data from a single data center. As Yue pointed out, the potential benefit in overall latency would be significant. For a market data recipient in Secaucus, the SIP latency for a BZX quote in a BZX-listed security would be reduced by more than 80 percent.

The range of possible architectural changes to consider -- we will talk about many today -- but at least preliminarily, we think that multiple instances of the

existing processors may be the best alternative for a few reasons.

First, as I said before, recipients would not be required to make any changes to their existing technology or procedures, unless they chose to do so. Firms without sub-millisecond latency concerns could simply continue to consume tape A and B data from SIAC in Mahwah, and tape C data from NASDAQ in Carteret, while those with geographic latency concerns could shift their consumption to the nearest possible instance of each SIP. For those that chose to migrate, it presumably would be a very lightweight technology shift, in many cases probably not requiring code changes at all.

While the SIP outputs would differ between data centers based on the time and sequence of trade and quote messages received, the system's processing logic would be identical, and provide consistent behavior.

Third, it would preserve the operating committee's clear responsibility for operating and administering a highly reliable Reg SUI system, versus the potentially ambiguous liabilities that could exist among many different competing technology providers.

And fourth, Reg NMS current requires that SIP plans "shall provide for the dissemination of all consolidated information for an individual NMS stock

through a single plan processor." Arguably, because SIAC and NASDAQ UTP would still be the sole processors, albeit with multiple installations, this change could be implemented without a change to Reg NMS.

We recommend the Commission undertake an analysis of the cost and benefits to the industry for any of these decentralized architectures. At this stage we suspect that the benefits of both objective, measurable improvements, as well as eliminating the perception of the two-tiered system might be well worth those costs.

MR. REDFEARN: Thank you, Michael.

Paul?

MR. O'DONNELL: Thanks, Michael, and thanks for your sterling leadership of the SIP distributed subcommittee.

I want to start -- I want to take half-a-step back. There is a threshold question here that we need to answer. And this may be the only thing that Dominick and I agree on all day, which is what's the problem we're trying to solve here.

If the problem we're trying to solve is that the SIP is for Main Street eyeballs, then we -- this simply becomes a content question: What's the data content? The current SIP is perfectly adequate, from a latency perspective, for Main Street eyeballs.

If, however, we're trying to say that the firms represented in this room who are providing services to Main Street eyeballs should have choice in whether they can use the SIP or the direct feeds, then we need to do something pretty drastic about the SIP, because currently that's not the case. If you're providing any kind of, you know, market-making service or brokerage service, or service for either Main Street eyeballs directly or via an institution like Isaac's, you need -- and you want to use the SIP, the SIP needs to be a lot better.

So I'm going to start from the assumption that the answer to that question is yes, we do want to give those firms that choice. But I can see a world where maybe you don't. And that brings a whole set of different policy questions we would need to address.

So I think Michael did a good job of explaining the technology, and I would agree that the technology architecture that he laid out is pretty compelling. I think you need three things to make that work.

One is the content that you're getting from the SIP needs to be sufficient. And we may get into a little later about exactly what that content is, so I won't go into that now.

Secondly, you need a fast consolidation engine proximate to where your trading system is -- next door,

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in the same machine, you know, $189 cable length away, something like that.

And thirdly, you need a fast network between the exchange and the consolidator. And also, Michael had a good idea yesterday that -- he recommended that exchanges provide their direct feed over wireless into the SIP consolidators. That's a good idea, too.

MR. BLAUGRUND: Paul is pointing that out largely because it was his idea.

(Laughter.)

MR. O'DONNELL: Thank you. And CMDA, from a technical aspect, really incorporates all of those things. But those things aren't particularly different from a technical aspect than what Michael has already suggested.

I think that if we took, you know, a SIP with the characteristics of the UTP SIP, 16 microseconds is their median, 99.9 percentile is something like 50 microseconds. All of that is well inside the geographic latency. That is pretty compelling. I don't know exactly how it stacks up against all of the commercial offerings, but it's certainly in the right ballpark.

If you took a SIP like that and fed it with wireless feeds -- and there are a couple of different offerings of wireless feeds -- and put that in Secaucus,

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that's pretty compelling. We could use that for a lot of our business. Maybe not all of it. Maybe Adam couldn't. But certainly it starts to become a real choice at that point, and we'd be thinking hard about where we use that, versus where we don't.

The problem is now you've enshrined in the plan the current state of technology and the current state of which data centers happen to be competitive. So in a couple of years' time, maybe 16 microseconds isn't a benchmark any more. Maybe someone comes out with a fast chip, or maybe one of the microbe vendors moves their tower across the street, and now it's two micro-seconds faster between my wire and Carteret. Or maybe someone comes up with a better laser system, and it's a little bit more reliable in bad weather. I don't think either the Commission or the plan wants to be in the business of having to decide which is incrementally the next phase of technology that we need to decide. That's not a good use of any of those people's time.

A more dramatic example would be let's say a new exchange pops up and decides to open a new data center. Maybe they go back to Weehawken, or maybe -- another example, Michael runs an exchange which trades a certain number of ETFs in Chicago. Michael, it'd be great if you would ship those quotes over wireless from

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Chicago to New York. But it's not entirely clear to me that that's the right answer. Maybe it is, and maybe there's a case for that, and maybe it's not. But it's difficult to sit in this seat and make that decision.

So you really need a market to help make these decisions for you. So CMDAs are way off, trying to create a market solution for that. Having said that, recognize that in Reg NMS this was contemplated and rejected for a good reason, which is that if we have a market that -- such that exchanges sell their data at whatever price, and then consolidators pick it up, consolidate, and sell it, you basically end up where you are today, which is that there is not a lot of price control around the exchanges data, because everybody needs to buy it. So CMDA is a more incremental approach.

So let's start with a couple of assumptions. Let's assume for now that the market data pool from the SIP is -- I don't know how much it is, because apparently we can't handle the truth. But let's say it's $400 million. And then some piece of that gets sliced off to pay the admin fees, to pay the processors, et cetera, et cetera. And that's a pool that actually runs the thing. And then the rest of it gets allocated to the exchanges based on their data.

So let's assume for now that that's the right

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number. And I'm sure that the funding committee will come up with an answer as to whether it is or not. CMDA basically takes a slight variation of it. Let's carve a piece of that off -- 10 percent, 20 percent, maybe it's a hard number, maybe it's a number that comes up via some bidding process -- and let's call that pool sort of the operation and subscriber pool. The rest is a data pool that goes to exchanges, just as it does today.

The difference is, rather than taking that operations pool and giving it to processors who are appointed in perpetuity, let's have a series of competing consolidators. Each of them has to jump through a number of hurdles. They have to be Reg SUI-compliant, they have to make various standards. One of the jobs of the governing body -- this is the standards of how odd lot should be aggregated, this is the data that should be on the SIP, et cetera, et cetera. So everyone's at least looking at the same SIP data.

Once you've met that hurdle and you get a gold star from Brett that says you're now an authorized SIP provider, you can then run your SIP, and you get the data from the exchanges, so the exchanges would provide their data via direct feed to these things, just like they provide it to the plan today.

Then those SIP guys go out and start selling.

And they get -- for every subscriber they sign up, they get a piece of that operations pie. We call it the subscriber pool.

Now these guys are in the business of competing with each other. It's up to them to decide do I want to be in Weehawken, do I want to be in Secaucus, do I want to be in some new data center that someone set up an exchange in. So a lot of the micro-decisions around what technology you're going to use, how data gets shipped around, do I need to buy this next new, faster FPGA card or not, those now get driven by market forces, which is a much better way of handling this, because it can be managed by supply or demand.

That's probably enough for now. We can certainly come back to some of the -- you know, there's a lot more detail underneath that we can come back to, but let me pause there, let Adam give his proposal, and then we can come back.

MR. REDFEARN: Thanks, Paul. I would only say that the decision might be made by -- to the extent that this is a plan -- maybe made by the operating committee of the plan, and not by division of trading and market. But that remains to be seen.

So, with that in mind, so Adam certainly has the catchiest name for his proposal, so tell us about one

feed, one speed.

MR. NUNES: I kind of feel like I should just hand that name over to Paul, because I think my thinking is only incrementally different than his. And frankly, my notes are only incrementally different than his, which is a little weird. But I'm going to say them, anyway.

So from my perspective, before we start discussing the various ideas for this, we need to define what goals we're trying to achieve. And to me, it comes down to do we want the SIP that is as fast as direct feeds, do we want an infrastructure that is flexible enough to evolve as technology evolves over the coming, you know, 10, 20 years, or are we happy with a SIP that is better, but just less worse than direct feeds, which I think kind of the distributed SIP would be. It would be better than it is now, but kind of structurally worse than a direct feed would be.

So, from my perspective, I agree with Paul that I think we want a SIP that is as fast as direct feeds. And from my perspective, the -- you know, there's a framework that exists to do that, and it is the framework we use to deliver direct feeds.

So the notion that I have would be the way to make the SIP data available would be similar to the way direct feeds are made available, where you call an

exchange, order it, and they say, you know, here is where you -- you know, here's your port and IP to receive that data, but the SIP data could be delivered in the same framework. Instead of calling an exchange, you would call the administrator, and they would coordinate your access to the data. That would open up the data to whatever, you know, innovation and consolidation that, you know, that market participants and vendors want to do.

So I think -- and this is, to me, kind of a pretty minor point -- the biggest difference between my kind of view and Paul's is kind of what type of -- you know, like, do you want them to be SEI, you know, compatible, or are we happy to just have a bunch of vendors who can put the data together and just kind of what -- like, do you want a lot of hurdles in the way of that competition?

So I think that's a -- you know, an important point, but kind of relatively minor, compared to do we just want a SIP that is as fast as the direct feeds. And, you know, I felt, listening yesterday, there seemed to be a notion that we can't have that. And I think that's, you know, categorically false.

So the framework exists, we know what we need to do. You know, my, I guess, argument against the

requirement to have the, like, SEI, you know, stamp of approval is that would remain, we would keep forcing the SIP data through a consolidator that they would then hand off to firms that then have to consolidate it themselves. So it would keep an extra hop in that mix, where I think that, you know, the way that technology is involved in consuming data, you know, that's not necessary.

So, you know, that's a pretty minor point in the grand scheme of things, given where we are and what we're talking about. But I think it's an important one.

MR. REDFEARN: And it may be that all of these proposals aren't necessarily mutually exclusive.

But that being said, so at this point in time I think we have a few different ideas that are thrown out on the table, and I think we want to go to our panelists now and ask to see, you know -- basically, just get some initial commentary related to what's been discussed so far.

So maybe we will start with Professor Bartlett.

MR. BARTLETT: Sure, thanks. And thanks for having me participate as the one person here who has no industry experience or connection. But that won't stop me from weighing in on my -- with my opinions.

So, as I sort of see things and hear these proposals, I mean, I am reminded that in some sense we're sort of here because of a policy decision, you know, with Regulation NMS, not to have a consolidated limit order book. If we had gone that road, we wouldn't be here talking about this.

The problem is that once we decide to have multiple venues sending out sort of their own best top-of-the -- their best bids and offers, you're in a regime of the possibility of having multiple NBBOs. And I think the problem I see is that that creates an enormous amount of distrust and uncertainty about are you getting the best price, given all of the discretion that we provide to our brokers in executing orders.

So my thoughts are that all of these proposals, while I think interesting and may provide better pricing with respect to direct feeds, continue to have this problem of having multiple NBBOs. And we're going to have continued uncertainty and suspicion in the marketplace. And I think if I was going to focus on fixing the SIP, I would focus on the back end, which is using the SIP as a way to evaluate compliance with best ex.

And if -- in that regard, you know, if we could just have what's the NBBO that was used for trade, that would actually provide enormous transparency into how that trade was actually handled and, in my opinion, would

actually address sort of some of the uncertainty and suspicion that arises with having multiple NBBOs.

And so those are sort of my sort of reactions, is that we're sort of suffering from the choice not to have consolidated limit order books.

MR. REDFEARN: So I'm sure that this is popping up on at least a few of the folks' minds up there.

Yesterday there was a conversation, when we talked about it, where I think it was Redline who said there is no NBBO, there already are -- one NBBO. There already are multiple NBBOs because so many brokers are independently aggregating that. And so we -- I think there is some question about, you know, whether there is one regulatory NBBO. The -- simply because so many people are aggregating.

And I think the other point would be that, you know, for best ex there was also some debate around, you know, whether or not people thought the SIP was usable for best ex, and a number of the panelists yesterday suggested that when they think about best ex they really do need a faster feed for best ex. Just reiterating that.

But that being said, thank you for that, and --

MR. BARTLETT: By the way, I just want to clarify. So I get that faster feed for routing and for

pricing -- I certainly understand that. But from my perspective as a researcher and as someone who is trying to evaluate whether or not people are actually getting the best price, that's a separate use of the SIP, and that's more of a -- you know, and in some sense we're looking at the historical data. That would be useful.

And I want to say right now all we have is Rule 605, which is horribly antiquated. We still have a five-minute definition of realized spread, which is just absolutely unacceptable, I think, because, you know, realized spreads decay within, you know, the first few microseconds of a trade. So we have no way to evaluate whether we're getting best pricing right now, which is where I would start the conversation.

MR. REDFEARN: Great, thank you.

Isaac?

MR. CHANG: Thank you, and thanks for the opportunity to participate on this panel.

I thought it might be helpful to explain my perspective, just from -- with a few underlying sort of principles before we get into the nitty gritty of the details, because you can talk about the details of these sorts of things forever.

And I would say, you know, we're coming at this from the perspective, really, at the end of the day, of

being a fiduciary for our investors. And we have a fairly diversified investor base. But public and private pensions and, you know, mutual fund, '40 Act fund, and investors are a significant fraction of our investor base. And so we take very seriously our responsibility to them, whether strictly speaking in regulation, or -- but -- or just in principle.

And I think one of the questions -- maybe a variant on the question that Paul asked and Adam sort of rephrased, which is what are we trying to solve, might be who owns market data, right? And if you went down this panel, I'm guessing that the representatives from the exchanges say they own the market data. And if I were to go to a broker, they'd say they own the market data. And you know, you go from the perspective of market participants, they would say, well, it's our orders that are going in that are creating this market data. We own the market data.

And so, I mean, at the end of the day, the fact that we're even talking about the SIP and what its purpose is, and why do we have it, and what problem we're trying to solve, I think, illustrates a fundamental underlying principle that in some way we're acknowledging that market data is a public good of sorts. And I think that's how we have to look at it. Otherwise, why not

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just let sort of market principles rule, free-market principles rule, and why bother with rules around the whole thing to begin with?

One thing I would underline is -- that Professor Bartlett brought up, that I think we have to keep in mind that -- and, you know, he wrote a very good paper on -- it was interestingly titled -- I think it was "Are Markets Rigged?" But -- and he -- his conclusion, actually, was not very much. But I think it illustrates the underlying point, that there is a fundamental concern and issue with investor confidence that we need to address. And at the end of the day, to me, that's what's really important here.

We can get -- I very much agree with -- you know, it was just early this week that, you know, I spent over an hour with one of our underlying fund distributors, talking to them about the implications of the U.S. equity market structure currently, and, you know, the different nuances which we go through to make sure that we can participate in an effective way. But it's a question that's really on people's minds, and it's much more than just an argument between brokers and exchanges, which some have sort of framed this argument as.

I very much agree with Paul, that whatever

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underlying regulatory framework we get should not be tailored around the current state of technology. Because, just like when 2005 or 1970s or whenever various rules were written you couldn't have envisioned the state of technology today, you -- I would argue you probably can't envision what it will be in 2 years or 5 years or 10 years, either, you know. We're talking about bouncing radio waves off the ionosphere, or maybe we're talking about Amazon putting an exchange in the cloud, in which case you actually don't know what your geographic latencies are.

I mean there's all sorts of different potential worlds that we have to plan for, and I would want to make -- and that's why, to me, the idea of having a market be able to decide this, rather than being prescriptive from a regulatory perspective, sounds very appealing.

Maybe with that I'll give someone else a chance. Thanks.

MR. REDFEARN: Thank you very much. Dominick?

MR: PANISCOTTI: Yeah, thank you. And to Paul's point earlier, I think, as an engineer, the first thing they teach us in engineering school is to figure out the problem before you start looking for a solution.

And so I submit that the problem is actually

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the creation of an NBBO. We keep throwing around this concept of there are multiple NBBOs, and I don't understand that, as a technologist. You know, I kind of think of national as one nation under God, so we have one actual BBO for the entire nation that is the same for the entire nation.

So really, much of what we're talking about here are solutions to a problem that has nothing to do with NBBOs, but rather has to do with regional BBOs, BBOs that exist, let's say, at some latitude, longitude, and altitude at a particular place on the sphere.

And so, really, distributed SIPs or multi-consolidator SIPs, in terms of the solution space rather than the problem space, they don't create an NBBO. In fact, they kick the can down the line, right? So today we're talking about 300 microseconds of geographic latency; tomorrow we'll talk about 300 nanoseconds of geographic latency, right, if we just move them into the same data center. You know, a nanosecond is about this long, right? So if a computer is on the other side of this room, there are material latency deltas between where the consolidation occurs.

And to that end, kind of geographic latencies are a bit of a red herring in terms of that environment, right? So if you have all of these different regional

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BBOs, people are already creating them, as you noted, and are already trading effectively, given those regional BBOs that they have created. Now, certainly, there are regulatory concerns that have to be addressed in that framework. But you see that it's already occurring in our industry.

So if we really care, I think, about Main Street and a national best bid and offer, really, I think what we ought to think about is taking the SIPs out of Wall Street data centers. Why don't we move it to where the people actually are? That is, in the cloud, somewhere in the cloud, where I can access the BBO, the national BBO, or last sale, via my laptop or my smartphone in a highly effective manner through a set of software APIs, and things of that nature.

And, in fact -- I think it was just noted -- I don't think we are too far away from exchanges moving themselves into the cloud, as well. And so some of the things we're talking about today are actually going to be amplified, over time.

MR. REDFEARN: Was the cloud suggestion -- when you're talking about iPhones, were you thinking about eyeballs or trading systems?

MR: PANISCOTTI: I think, ultimately, in the cloud you could do both. But certainly eyeballs are really easy -- it's really easy to put eyeballs on infrastructure that's running in the cloud, right? I can reach the entire world very quickly via the open Internet by putting infrastructure in the cloud.

MR. REDFEARN: And just o I understand, is that -- so that is a -- is that, like, Paul's CMDA concept, but as opposed to being in Secaucus and Carteret and Mahwah to being in the cloud?

MR: PANISCOTTI: No, I think you'd probably build, again, one system that was a consolidator. Now, that -- certainly that system could be built in a distributed manner, much like Amazon is one service that you go to, but it's a distributed system behind the scenes that you're not completely aware of, in terms of what it does. But you access one single point of reference, one single service level.

And so I think kind of pushing the technology aside and how technologists might actually build that system, I think you would see it as one access point to that information for a national best bid and offer. You know, much like when I was a kid you had a call to get the time, to set the time on your watch. You used to have to call, you know, a telephone number and it would say the time at the tone is whatever. The reason that exists is because the time needs to be distributed across

the entire nation the same time at the same reference point, and everybody's is a different geography. And you do the same kind of thing, possibly, in the cloud, using technology.

MR. REDFEARN: Given the latency uncertainties, would that be an effective substitute for the prop feeds for algorithmic trading?

MR: PANISCOTTI: It's really -- it would really depend on what you mean by algorithmic trader, right? There are all sorts of algorithmic traders. I'm an algorithmic trader when I take my smartphone out of my pocket and place a trade. I'm using an algo, it's in my head possibly, or I'm running it on my laptop.

And so I think the whole concept of algorithmic trading and where servers are and what those algos are, again, is much to do about nothing. It's a red herring. Technologists solve these problems, they solve them very effectively. They deal with the latencies, and algorithms are built around that to deal with them.

MR. NUNES: So I guess if you take what Paul, Isaac, and I said that was providing for a flexible, you know, future infrastructure out of the infinite possibilities for where technology goes, that's one of them. It wouldn't preclude it from doing that.

I think we're in a world right now where the

notion of putting proprietary feeds on the cloud is kind of laughable. So it seems like a weird way to, like, let's go in a way that no one currently does it or plans to do it, versus let's have a flexible thing where, if the cloud gets there and that's how everyone wants to do things, that's an alternative and that's what we'll do.

MR: PANISCOTTI: I would say that all new technologies are laughable when they're first introduced, and later on they're accepted as truth.

MR. NUNES: Oh, but my point is that is one of the potential outcomes of the world, and we can have a flexible one for structure that is open to that. Or we can just choose that one, and then -- you know, and then 99 percent chance that that isn't a case, or probably higher -- then we'll do something else, because that's the better thing to do.

MR. REDFEARN: So it's interesting, you know, the flexible approach. Then Dominick presumably does provide for an opportunity to the extent that the market evolves there does so. So I think it's an interesting point that's been raised, that when we think about this, right -- we had a -- you know, I mean, we're still working off of what we came up with in 1974, right?

And, you know, bid ask, last sale, that's what the SIP is, and the fact that we're here today, this much

time later, having a conversation about a decision that was made that long ago is -- well, that one is an interesting one. I won't use the same word.

But I will say that -- I'm sorry, Michael, did you want to jump in?

Oh, Isaac. Just hit your -- if you hit your light, I'll see the light on, and then that will indicate who is --

MR. CHANG: Got it. Just one point I wanted to mention, which was around this idea of not designing -- or a solution around just the current state of the world. Maybe I'll just throw this out there --it's probably something that was discussed at length yesterday, but I'll throw it out there -- is that in a world where you have a public feed and you have proprietary feeds produced by the same underlying exchanges, you have an inherent conflict of interest that needs to be managed.

And that's not a statement on the current, necessarily, even intention of the exchanges. For example, I've known Michael for many years and, frankly, personally, I trust him -- like him and trust him quite a bit. But just because I trust him doesn't mean that our regulations should allow for that conflict of interest to exist.

Like, given that Michael's in the seat, I kind of trust he's going to do his best and be a reasonable human being, because that's always how he's acted when I've talked with him. But he might not always be in that seat. And why allow for a conflict to exist, and perpetuate, and instead solve the problem of, oh, we'll reduce the conflict -- we'll reduce the scope of the conflict, rather than just removing the inherent conflict in the regulation?

And, I mean, it's sort of like saying, look, people don't really rob banks, so let's just take out the law that you're not allowed to rob banks, because it's not really a problem today. I feel like we need to get to the underlying issue to restore confidence, rather than just tactically look at the current state of the world and try to incrementally improve it.

MR. REDFEARN: Okay. Jarrod, why don't we turn it over to you and get your thoughts on all this?

MR. YUSTER: Terrific, thank you.

One way to reduce geographic latencies is to force all the exchange matching engines in one data center.

MR. REDFEARN: But, you know, so -- think about that from a competitive implication and -- right? I mean --

MR. YUSTER: I'm not proposing it. I'm just

saying if you want to reduce the latencies, that is one way to do it.

So -- but as a technology provider, my views are based on our clients. And so I did some initial preliminary discussions with our clients to get feedback. And in discussing these three proposals, first and foremost there has been critical negative feedback of keeping a single SIP provider. So the distribution of a single SIP provider we've not seen positive feedback, initially, on that. Our clients do want to see more exploration of the competitive SIP, or the European model and removing it entirely.

Now, it's important to note that -- I think Adam mentioned this -- over 85 percent of our clients use an API or a feed normalizer. So the argument of keeping the single plan for simplicity, people are already using APIs and normalizers. And having them -- giving them the capability and the option to register as SIP makes a lot of sense. And it does create for competition for cost competitiveness, as well.

You know, the other thing I think is important to note is, looking at the SIP and making enhancements, you really need to look at Reg NMS, which, to a certain degree, is keeping the SIP afloat, right? So you can't really look at the SIP in isolation of the technology,

and the regulations are really why people still have to use it for routing.

And I think you also need to separate between market data viewers and executing on market data. So --

MR. REDFEARN: Thank you.

MR. YUSTER: Maybe that opens up some of the --

MR. REDFEARN: Interesting. There is -- that's helpful. And there are some aspects within Reg NMS, and this discussion has been had where we had -- you know, there was a discussion back then that was should we have competing SIPs or should we have a central consolidator. And, as I mentioned in my opening remarks yesterday, a decision was made to have a -- you know, a consolidated tape, or -- you know, a consolidated SIP.

And part of the reason for that was it was a concern that if we went to a distributed SIP -- and I think Paul made reference to this -- that there was -- it would be question about what you would be able to do about the pricing that would happen because everybody would need to have it and, you know, and there would be those challenges which I think the Commission at the time decided was too challenging to fight off.

MR. YUSTER: If I could just make one more comment with regards to the European model, the initial feedback that I have received is -- there really are two

camps. One camp is concern that if you remove the SIP then the exchanges have more carte blanche to raise prices. And the other camp feels that if you move the SIP, regulators will come in and regulate pricing more so and make it more palatable.

MR. REDFEARN: Okay. Michael, did you have something?

MR. BLAUGRUND: I'm just going to comment on a few of the points raised.

First, I think that, you know, the idea that there is no NBBO, or there are multiple NBBOs, I think everyone acknowledges that this is a simplifying assumption, right, that, based on where you are, you are going to receive information at slightly different times. I would agree that, you know, it's simplifying, but valuable. And I think, particularly for retail, it's important to persist a consolidation. So I think the European model would certainly be a step in the wrong direction.

Moving everything into a single data center would be interesting. You'd have significant geographic DR concentration risk, and I don't think that's a likely outcome of --

MR. REDFEARN: I'm guessing you would pick Mahwah?

MR. BLAUGRUND: Mahwah would be my recommendation.

(Laughter.)

MR. BLAUGRUND: But, you know, I think, you know, Paul, Adam, and Isaac, you know, raise a interesting idea. It certainly would be appealing -- and I can understand why it's appealing -- to think, well, we don't have to pick one specific implementation, like, we'll just figure it out because market forces will lead to better outcomes

I worry that, you know, the market may optimize for simply speed, right, and forego resiliency. Or it may -- you know, it may optimize in some other fashion. We can't predict. That may be acceptable, but I think that one of the benefits of the current processors is that they are extraordinarily reliable, they are extraordinarily resilient. And I would just caution that we ought not cast that away.

Again, I don't know that our recommendation is the best long-term solution. But it seems to me like it's the most achievable approach. You know, a lot of people seem interested in competing consolidators, in part, because I think there's an implication there that means they'll get to spend a lot less money. And I don't know that that's really accurate, right?

I think there is -- you know, as Paul was describing, you might have a pool that's apportioned to processors based on their subscribership. But I think they are independent questions, you know. The cost to produce the data is not the cost of the consolidator. So I think maybe people, when they realize that, they may find the competing consolidator model to be a little less attractive.

MR. YUSTER: Can I just make one comment on the -- with regards to what Michael said, that retail needs the SIP?

A few years ago NASDAQ came up with an offering, NASDAQ Basic as an equivalent. Wildly successful, where hundreds of thousands of users are using -- it's just the inside quote for their market, but clients -- and retail clients, particularly -- do not want to pay $12,000 a month for the SIP.

MR. REDFEARN: Paul, I know you wanted to respond to the resiliency issue.

MR. O'DONNELL: That and a couple of others.

Firstly, the NBBO. You know, to Dominick's point, NBBO is, I think, a defined term in Reg NMS, and that means a certain thing, which is great if you're a lawyer. But the reality is, as Michael pointed out, depending on where you are, the laws of physics -- you're

going to perceive reality slightly differently. So if you're in Secaucus, your reality is a little bit different than if you're in Mahwah. We just -- we need to acknowledge that.

I think it's up to each firm. And under any of these models -- and even in reality today, it's up to us as -- we're required to have procedures and policies that -- by which we justify this is how I'm collecting market data and how I'm determining what my view of the market is. And that has to be a reasonable set of policies, and that's not going to go away. And maybe we need to redefine the word NBBO and call it just BBO. I don't know. But I think getting too high up on the national BBO as being this golden thing is probably not helpful.

Secondly, on resiliency, so I think it's a couple of points there. One is having different versions of this thing running on different tech stacks, it's probably the best way to get resiliency. So it's important to make sure that there are standards set, and that everybody calculates their version of the BBO the same way, and uses the same rules for odd lot aggregations so that you know for any given exchange that all those stocks do odd lot aggregation the same way, for example, that you know how many shares are available at the inside, all -- it's a myriad of details of how you

need to do this stuff.

So part of the job of the governing body for this -- which may be a plan or maybe something else -- is to set those rules. Once you set those rules, I'd much rather have two completely different tech stacks implementing it, in case someone has a bug and one of them goes down. So I think resiliency is probably enhanced by this model.

And I also challenge the notion -- carefully challenge the notion -- that SIP is as reliable as pointed out. It hasn't had a hard outage in a while, but it's not as -- if you're one of those enterprising advisory committee members who actually measure timestamps, it's also not as robust as might be led -- as everyone might be led to be believed (sic).

MR. NUNES: So I'll echo some of that. I think, you know, years ago I was randomly in D.C., and it seemed like the way most people here defined the SIP was the thing that broke a couple weeks ago that should never break. And I think we're now in a position where we have all of our eggs in one basket, so it better be resilient. And, you know, with a more open and competitive model we wouldn't have that problem. So we -- you know, that would solve one of the big issues we currently have.

I think, you know, similar to Paul's point, we do have flexibility around what the NBBO is. It's kind of built into NMS on routing. But there is an acceptance that it's the firm's view of what the inside is. And, as Paul said, you have procedures around how you do that. You know, at my firm we have more than one view, based on what data center we'd be trading from.

Also, on the cost assumption side, my assumption is you would do something to the effect of haircutting the current pool by about what it costs to do the SIP consolidation. And the -- you know, the -- whatever -- the administrator would collect 95 percent -- I don't know what it is. But there's a version of the world where if you want, like, the, you know, the microwave processed by FPGA version of the SIP to power, say, your pool because all you need is best bid best offer, that probably costs more, right?

Like, you're leveraging a lot of technology. You're paying for the data, that's part of it, and then you're paying for the technology. That's another part of it. If you want the best technology, maybe it costs more than it does today. If you're happy because you have something that's going to, you know, websites, and you're less worried about it, then you probably just stay on the NASDAQ and NYSE SIPs and, you know, get your data that way.

MR. BLAUGRUND: I think you have a sophisticated view of this. I think there are others --

MR. NUNES: Thank you.

MR. BLAUGRUND: -- including some of the panelists yesterday who suggested, you know, I could run the consolidator for less. Therefore, you know, if it costs me 10 percent what it costs the existing processor, then everyone is going to pay 10 percent what they pay today.

MR. NUNES: Meaning the -- but that's, like, based on the assumption that you have -- I'll use Paul's number -- a $400 million consolidator, which is, obviously, absurd.

MR. O'DONNELL: Can I --

MR. NUNES: The technology doesn't cost that much.

MR. O'DONNELL: Can I jump in on the cost thing for a minute?

MR. REDFEARN: And then I want to get to Dominick and then back to Professor Bartlett.

MR. O'DONNELL: I'll be brief. In the process of prepping for this I had several people ask my why are there three tapes and two plans. I think it's worth pointing out that there is an awful lot of duplication in the current model. There is two sets of administrators,

there's two separate tech stacks, there's two sets of processes. That's a lot of duplication, already.

A very simple first step would -- just let UTP handle type A and B stocks, and let CTA handle type C stocks, and let them compete with each other. And the marginal infrastructure cost of each of them having the capacity to do that is probably pretty small.

So I think, if you re-imagine the way the plans work, there is actually some money to be saved in the current model that can be re-deployed to fund competing consolidators.

MR. REDFEARN: Dominick?

MR: PANISCOTTI: I just want to make a point. The NBBO is quite a simplifying proposition at some level, right? It goes to one location, it's distributed from there. Everybody sees the exact same thing.

So -- and this is going to speak to Paul's earlier point -- as we move towards distributed models, right -- in software engineering there is a law called Metcalfe's Law. Every one of those additional distributors that you're going to add is going to add complexity to the order of -- in a quadratic-type order.

So every additional consolidator adds additional complexity. All of those consolidators are basically stochastic in some way. So there is randomness

in what they do because that's how computers work, right?

So you can imagine there is going to be tons of questions about those prices, about the information that they're producing, why they're not all the same, why they're slightly different, why did one take a millisecond longer than another one, why is the one closer to me taking longer than the one farther away from me. All of these questions are actually going to be raised if you increase that distribution.

Now we can say we can simplify that assumption because we only have four data centers. And don't hold me to this number, but I think 15 years ago there were no data centers, right? Like -- so who knows what we're going to have in 15 years from now? We could have 500 data centers. And how are we solving that problem, then?

So I think if you come back to the point of a national best bid and offer, it's extremely simplifying. It's produced in one location, regardless of the technology that uses it. And, by the way, national last sale, as well. It's produced in one physical location, it's one actual item, you know what the price of a given security is at a given point in time. And that is the information.

Now, high-speed traders, high-speed algorithmic traders who need more rich information to do what they need to do for competitive reasons, they have access to that information today. They can consolidate locally, if the regulations allow them to do so. And they can run their businesses as effectively as they need to.

MR. REDFEARN: I think we have to go back to, I think, the sort of dichotomy that was presented at the beginning of this, which is, you know, is the SIP just for eyeballs or is the SIP for trading systems. And to the extent that the SIP is for trading systems, then we're asking this basic question about does it meet the needs of the core data infrastructure. And I think we've heard fairly clearly that it doesn't, that whether there is -- because of the latency differential and because of the content differentials, that something needs to give here.

And so, you know, so I'm not sure if -- is that a suggestion, that you keep the SIP in one place, exactly like it is today, and then --

MR: PANISCOTTI: I think the only point -- sorry to interrupt, but the only point I'm trying to make is that the solutions that have been proposed only complicate the problem.

So again, we should return to what is the problem, so that we can actually generate an appropriate solution. What we're trying to do right now is optimize

existing solutions that were built to problems from 15 years ago. So we should walk away from, oh, you know, let's just build another SIP because we have a data center in Secaucus or Carteret or Mahwah, actually rethink what we need to do as an industry, and do that.

I think, you know, the path we're currently on is just how do I optimize the existing system. And really, that optimization problem, at least in the proposals that have been put forth, create further complexity.

MR. REDFEARN: Isaac?

MR. CHANG: I actually really like the question that Dominick raised, which is we need to ask what problem -- essentially, what problem we're trying to solve for. And I would actually posit that someone from our perspective as an institutional investor, as a client of firms like Morgan Stanley and Paul and a participant in the marketplace, whether it's SIP or not -- and let's hold that aside, but maybe let's just talk about core data more broadly -- and I don't know that -- I'm not a lawyer, and I'll admit I started out in the market as a simple bond trader, so much of what I've learned about equities has actually come from a number of the folks sitting on the dais with me over time.

But for me to be able to look my investors in

the eye and say I did a good job for them, I need more than the SIP. I need more than just top-of-book at a given point in time, at a given location. And I think Professor Bartlett brought it out to begin with, you know. For whatever historical reasons, that's just not the world we live in today, and the one we live in is pretty complicated.

Now, if we're saying that core data shouldn't satisfy that, then we can have a SIP that is simpler, that does something else. But I think that's a fundamental underlying question that we need to answer. And, you know, our -- certainly our preference and our argument should be that core data should be as broadly applicable as possible.

MR. REDFEARN: I mean the -- I guess a question is -- and tell me if you heard this, but it seems like it has been suggested that a majority of the volume in the market has said that they feel it is necessary to buy proprietary data with better connectivity, right? And whether that's X number of firms or X number not, it -- did -- is that -- did we hear that?

Because if that's what we're hearing, and if this is not serving -- because then you get to another challenge which is then you have to buy this. And then, if you have to buy that, then that raises another whole

set of questions that we have to explore, in terms of, okay, people -- it's mandatory to buy all of these things to participate in the marketplace in a core way, then that uncovers another set of issues that are equally challenging.

MR. BLAUGRUND: I don't know that I would typify what we've heard that way, but nor would I describe it the way Dom has, either.

I think what we're hearing is that -- at least what I choose to hear -- is that we would like to see the SIP improve such that it becomes a more viable substitute for a broader set of industry requirements. You know, and change the supply side, at least, of the economics of market data.

And you know, whether it's distributed SIP or, you know, competing consolidators, or the rhyming alternative --

(Laughter.)

MR. BLAUGRUND: You know, all of those, I think, are trying to introduce --

MR. NUNES: Isaac said you were reasonable.

(Laughter.)

MR. REDFEARN: It does sound good.

MR. BLAUGRUND: All those are trying to shift the economics, and I think that's one of the important goals. The second is the perception. And I think it's really important for investor confidence to be confident that what you see is the right price.

MR. REDFEARN: Right.

Professor Bartlett?

MR. BARTLETT: So first, I guess I feel obligated -- so, as I said, I wrote a paper finding that the markets weren't rigged. I just want to say there was only one particular narrow question I was asking with respect to that. So there's plenty of ways in which the markets are problematic. I just would like to acknowledge that.

So -- and I think it's worth, you know, clarifying that, you know, right now there is a valid question about what is the function of the SIP. And so, when you look at how -- you know, the exchanges have helpfully provided all disclosures in terms of how they price and route orders. And you look at almost all the exchanges, they all route and price primarily off of direct feeds. And so, if you think about just that fact, it's like, well, why aren't they using the SIP? I thought that's what the SIP was for.

But there's no requirement, you know, that says you have to price and route trades based on the SIP. So there's widespread acknowledgment, as everyone has

acknowledged that you have to buy direct feeds if you want to actually give best execution and route appropriately and avoid trade-throughs. So if you look at the market in that regard, it seems like people are trying really hard to get to the best price.

But Dominick raises a totally valid point, which is that there is no best price. There's lots of best prices. And that's the problem that's going to get more and more pronounced, which leads me back to sort of my original point, which is that when I think about the SIP I think about maybe what the SIP should be focused on is helping to make sure that people can demonstrate that they are working as hard as they can.

And as Isaac was saying, you know, you're working very hard to get the best possible price. But yet uncertainty remains, suspicion remains. And so, can -- is it possible that, as part of core data, maybe what, you know, you have to do is just disclose this is the price I observed when I executed the trade, and then just let market forces then evaluate who exactly -- who is actually performing -- go ahead.

MR. CHANG: Oh, sorry, I didn't mean to cut you off. But I would just say in reality the problem is actually a lot more complex than what the price was or top of book was at any point in time.

So you know, for example, as a client of Paul and other broker-dealers, we rely on their smart order routers to access the marketplace. And we need to ask the question why did you make the decision you did. And top-of-book price is one thing, but there are many other implications, as well. Frankly, you know, I mean, people have sort of said, you know, depth of book is one thing, but it even goes beyond that, right?

I mean you want to -- there -- you know, micro-structure research has shown, like, order information beyond just aggregated depths of -- has -- can have meaningful value. Correlating markets can have meaningful value. All of those things come into that interplay. And when we sit down with our brokers and talk to them about this, it goes far beyond just what is even the information content provided, you know, at the top of book and last trade.

MR. REDFEARN: So let me just state what I have heard before, Professor Bartlett, about the sort of CMDA proposal was the idea that there might not be a single NBBO, but there might be a gold standard in Secaucus, and a gold standard in Mahwah, and a gold standard in Carteret, and somewhere else, so that while Secaucus might not be the same as Mahwah, Secaucus might be -- in that particular ecosystem, you might actually be able to

create what there ultimately serves as, effectively, sort of the gold standard for that market, which will inevitably -- because of, you know, the space-time continuum -- will be different than what you have in Mahwah.

MR. BARTLETT: And my concern with that model would be imagine you're in a -- you basically, then, have access to say, you know, five different prices that may be prevailing at that nanosecond in time, which means that you have a choice about which price you fill at, which then leads to uncertainty about whether or not you're actually using the fill that serves your customer's interests the best, or the interest that serves your own interests.

And again, part of the reason I think we're in this position of having suspicion without sort of more transparency is that these are all for-profit entities. And so it's perfectly rational -- maybe even obligated on the part, you know, to maximize your bottom line at the expense of others, if it's permissible. So if there is discretion in choosing the NBBO, then you're going to continue to have this uncertainty, and we'll have more of these roundtables about what we can do, and the like.

MR. DONOHUE: Could I jump in for a second? Are you suggesting that trade reporting be altered to include the NBBO that the trader traded at?

MR. BARTLETT: Yes, the price that they observed in the marketplace at the time.

And I fully acknowledge Isaac's point, I totally do. But we already have this idea that we should be able to benchmark trade execution off of some price, right? And the problem is that that system is just horribly outdated and antiquated and, frankly, useless. So right now we have no way to evaluate how a trade is executed.

And as a researcher, I'll just tell you, when I'm trying to evaluate trade pricing, I have to use an algorithm that basically says, well, this is the midpoint at the time, and so I'm going to -- I guess this was a buy order, I guess this was a sell order. We just don't have the granularity at the data to figure out what was actually happening in the marketplace at the time the trade occurred.

So I just feel it could improve a lot more of the information that happened when the trade --

MR. REDFEARN: It's interesting. Yesterday Simon Emrich from Norges Bank investment management said that they actually need to buy prop data now at the data center where the people are trading, so that they can do accurate post-trade analysis. So he sort of said they

can't use the SIP for their post-trade analysis, because they actually want to see the quotes in the location that they're doing it. So it was just an interesting sort of evolution of that.

I do want to -- I do want very quickly -- sorry, we -- I sort of deviated from some of what we initially had here to allow this discussion to run a little bit. But one of the things that we did want to do was sort of pick off some specific topics that have already come up in the -- you know, what needs to be included in core data, what needs to be -- you know, so when we think about this model, right, we -- just a couple quick things.

So, yesterday one of the things that was suggested in terms of sort of core -- we think of within the scope of, you know -- within the scope of the whatever model it is, right, whether it's CMDA, one speed/one feed, you know, do we need to include -- so yesterday it seemed like we had some support for, in some cases, auctions, odd lots, you know, some said depth. That wasn't universal.

And I just wanted to ask the panelists very closely, when we think about core data infrastructure, you know, what would you list as what should be included in that? Is it auctions and balance information? Does

it include odd lots? Does it include depth? What do you think should be in the scope of that?

And maybe I'll start back at your end, Jarrod. Do you have a thought on that?

MR. YUSTER: Again, it goes back to who the executors are. And you know, broker-dealers should have all the information that's available, whether it's auction information, imbalance information -- full depth, as well.

I mean -- and I'm going to go back a little bit towards looking at, again, Reg NMS. You know, we talked about -- someone mentioned about having data for measuring ISOs that are market sweep orders with Reg NMS do require capturing the NBBO alongside of it. And you have to show within a second that you've actually used the NBBO. That's quite a long time, versus, you know, the nanoseconds that we're talking towards.

So I went a little bit off topic, but I wanted to bring that --

MR. REDFEARN: Again, let's not go down the ISO path just yet.

MR. YUSTER: Okay.

(Laughter.)

MR. YUSTER: So -- but anyway --

MR. REDFEARN: I think that it has been looked

at in periods of time significantly smaller than a second, though. But anyway --

MR. YUSTER: So we typically see clients who are not broker-dealers will take the SIP plus at least one, if not more, direct feeds currently. The broker-dealers who are -- need to have best execution are taking all the feeds, plus the SIP.

MR. REDFEARN: Got it.

Dominick?

MR: PANISCOTTI: I think there were some proposals made yesterday -- and as a technologist, I don't think I'll speak to which ones in particular that we should add or not add, but I will say one thing.

I think that, you know -- and I think it was brought up yesterday -- that there are always new innovations with respect to market data that exchanges and the like are going to create. So I think the conversation just will continue to come back to, oh, I need that new innovation in order to run my business. And so, whatever you -- we decide as an industry to set as core data today is likely to change 10 minutes after you set it.

And so I think, really, we're in a position right now where individuals can get access to this data, can get access to these innovations. It's highly competitive. Nobody is having any problems actually figuring out what the price of a security is to trade it. And so I think maybe it's time to think slightly different about whether or not it all needs to go into one feed.

Maybe it shouldn't go into one feed. Maybe certain will be deprecated -- certain items will be deprecated over time, and some others will actually come into existence over time. And if we try to get ourselves into this how do I solve this problem with one kind of, you know, socialistic, if you will, feed, then I think we're going to not serve the marketplace effectively over time.

MR. REDFEARN: Paul?

MR. O'DONNELL: A few thoughts. One, I think the odd lot one has been done to death. We all know that, for high-price stocks, there is a market inside the NBBO. We need to deal with that. I mean I like Michael's solution yesterday of just putting all the stocks -- changing lot size works, putting odd lots on the SIP works. They're all viable solutions. But it's -- seems to be agreement on that.

Secondly --

MR. REDFEARN: Although that's kind of hard to make happen, right? Getting all the stocks to split?

MR. O'DONNELL: That's probably harder to make happen than changing the lot size. I don't know --

MR. REDFEARN: I don't know if that's an --

MR. O'DONNELL: I don't --

MR. REDFEARN: I don't know if that's a policy option that we have. So I'm not sure --

MR. BLAUGRUND: I think listed companies make that selection --

MR. REDFEARN: I think they do make that decision.

MR. O'DONNELL: Lot size, as well?

MR. REDFEARN: Well, no. I mean I think -- so the decision about splitting a stock is not a policy decision, an exchange decision, or a broker decision. That's an issuer decision on making that. And there seems -- it seems to be popular to keep prices higher.

So, notwithstanding that, what is your thought on odd lots?

MR. O'DONNELL: Well, I think they should be in the SIP, as is. But, you know, a very simple first step -- and I actually don't know who has the authority to do this, whether it's the listing market -- or just have a rule that says -- I think you suggested it yesterday. If your stock is over $100 have a lot size of 10, and if it's over $1,000 have a lot size of 1. That feels like

an incremental step that's not even hard to accomplish.

But I don't know who gets to do that. Is it the listing market, Michael?

MR. BLAUGRUND: I think we have a role in that.

MR. O'DONNELL: All right, there you go.

MR. BLAUGRUND: Well, you know, in collaboration and communication with the various participants and investors, but --

MR. O'DONNELL: Sorry, I lost my train of thought.

Secondly, auction imbalance information is a good one. Auctions are becoming more important in the market. We have -- there's a lot of studies around there around how much volume is shifting into the auction.

Where -- the number of Mr. and Mrs. Main Street directly that are going to be trading the auction less on an imbalance is probably small, but the number of institutions who care about that information as they're trading into -- I think is high. So that -- I would consider that core data.

And then lastly, let's talk about depth. And there's a few angles of depth. You could talk about how many levels of depth. We don't really even have one level of depth now. I don't know if people realize, but the size that's available on the NBBO is not the

aggregate amount available at all of the markets. It's one of the markets, and we're having a little debate before. None of us could even put our finger on the algorithm around which market it is, but it's not a particularly useful number.

And I think there's an angle of that that didn't get discussed, and it's probably a rabbit hole we don't want to go too far down. But the regulatory requirement for not having excessive market impact is shifting from exchanges to brokers. We're seeing that, and that's happening slowly over years. Very difficult to know that an order you're sending to the market is not going to have excessive impact without knowing what the depth is at the inside, let alone two or three levels deep.

So I think it's not a stretch to say that in order to fulfill a lot of brokerage functions, you actually need to know a little bit more about how deep the market is that you're trading in.

MR. NUNES: So I think Isaac framed this question most appropriately. You know, we've basically taken the action years ago that, you know, some data is a public good, and we're going to treat it specially. And I think that, as we look at that, we should think in terms of, like, which data deserves that treatment and which data doesn't.

So, you know, I think, certainly in the current state of affairs, odd lots fits into that. As a retail investor, you want to know, you know, if you're buying 1 or 10 shares of the high-priced stock, what the price is for 10 shares, what the price is for 100 shares.

I don't really have a great answer on auctions. That, to me, is probably a little bit more borderline.

I think on depth, you know, putting and trying to force every market's depth into a single feed strikes me as we get kind of the worst of all worlds in that. So I think there is a room -- there is room for a line between this data is special, it's what the public needs to make decisions, and it informs the public about prices, and this data is for professionals and professionals, you know, can consume that data and make, you know, make intelligent choices about it.

MR. REDFEARN: Isaac?

MR. CHANG: As I'm listening to everybody, I think there's a lot of very sensible suggestions. I guess I have to admit, though, I'm struggling with the idea that either the SEC or a committee is actually in the business of trying to exactly draw the line of what is core and what is not. It seems like that's going to be a revolving thing.

I'm somewhat sympathetic to what Dominick said, which is the second you set it, some exchange -- maybe one of -- probably one of these guys -- will come out with a new feature that everyone is going to want, and we're going to be sort of chasing our tail, so to speak.

Of course, then -- and this is certainly something that probably wouldn't be very popular among certain parties -- but why isn't all market data public good? Why isn't everything included in core data? Why exclude anything? Everything is useful.

I mean the distinction between professional and non -- and retail, I think -- in the world today, given the fact that retail and individuals, frankly -- like, again, like, people think of AQR as a professional investor. I'd like to think I'm a professional market participant. But I'm acting as a fiduciary on behalf of individuals: public and private pensioners, mutual fund investors. Why should -- because they're investing money with me, why should their interests be treated any differently than if they were trading directly?

MR. REDFEARN: I guess just a couple of quick thoughts, if you don't mind.

One is that I think Dominick did raise a very good point. Simply because we have an opportunity to potentially update the definition now for the first time

in 40 years or 50 years or whatever it is, is -- might be worth doing, regardless if it changes next week. It certainly brings us a little bit closer.

But you know -- and then to -- back to Dominick's point, I guess the question that I have is he raised the point about innovative data products, and certainly we -- I don't think we'd want to do anything that would stifle innovation, right?

And so -- but it may very well be that -- I mean we're not talking about a number of the information services products that are sort of outside of what market participants need that sort of fall into that innovative area. So it may be that there is some way of -- but -- and -- anyway, but a number of good points raised there, Isaac, thank you.

Michael?

MR. BLAUGRUND: We would recommend including odd lots in the core data that the SIP carries. We would recommend including auction imbalance information. And while I agree on some philosophical level that, you know, we may never catch up with the perfect definition of what is core, that strikes me as a really sensible and achievable next step.

MR. REDFEARN: Thank you.

Professor Bartlett?

MR. BARTLETT: Yeah, I would say that, you know, just in keeping with what I said earlier, it depends on how we view the SIP, going forward.

Certainly, including odd lots in the trade data, I think, has been incredibly useful over the years, and including it in the quote data, I think, would be also helpful in sort of core data. But the -- if we view sort of the SIP as increasing playing a role as trying to evaluate, you know, what the market was perceived at at the time a trade was executed, and then it's basically -- its price, its depth -- and, ideally, it would be multiple levels of depth, as well.

MR. DONOHUE: Can I ask a question about the auction imbalance information? We've got the opening and closing, but we also have intraday LULD halts and reopening auctions. And on August 24th that was -- you know, didn't go as well as it could have.

If we include reopening -- or imbalance information in the SIP, will it encourage more participants in the reopening auctions, or is that not likely the result?

MR. BLAUGRUND: I think it's unlikely to discourage participation. And I think, if it allows for eyeball users to examine dislocation and choose to participate, then that would be worth the additional

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effort.

If I could just respond briefly to the -- some of the comments on adding depth to the core data regime, I think, as Adam said, like -- right now we're talking about, you know, trying to improve latencies, trying to improve performance. Adding a tremendous amount of new processing and data into the SIP, you know, that would be a new type of challenge, technologically.

I think when people say they're interested in expanding, you know, depth information into the SIP, what they're really saying is we would like the prices of depth data to come down. I don't know that anyone is really eager to see the SIP take on a broader obligation, in terms of processes.

MR. BARTLETT: Quick -- Michael, just a quick question. So in your direct feeds you provide multiple levels of depth. Is that -- does that meaningfully affect the latency of transmitting the direct feeds, or is it a cost question?

MR. BLAUGRUND: I think that there are different ways that you could do it.

I mean I think what we've proposed is that the SIP in its new incarnation would take order-by-order feeds and would provide, you know, processing to establish the BBO.

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There are also products that do that on the exchange side, produce ABBO. And there are products that produce by level. It does take time.

MR. REDFEARN: I guess the -- it's an interesting question and point, because today there are private, competitive, software/technology providers who are doing exactly that, right? They're doing an aggregation of the top-of-book feed, and they're selling that at a very different price point than the SIP, and they're also aggregating depth of book. So it may very well be that, to the extent there was a competing model, there -- you know, the question would be is there some way of bringing those participants within the scope of what we're thinking about.

But I hear what you're saying. I mean when we think about the SIP today, and you think about bringing in depth of book, it does seem like it could be a big challenge.

I have one more question. And we are going to try to land pretty close to 10:30 here. We're almost out of time. So, so far I've really appreciated the discussion. The -- in terms of the technology, moving away from the content side but to the connectivity and the sort of other infrastructure questions, right, we had another list of questions.

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As Yue mentioned at the beginning, you know, there is microwave connectivity between the market and the data center, there is, you know -- should it be, you know, a 10 gigabyte or a 20 gigabyte, you know, connection.

I guess maybe, since this discussion has evolved, perhaps the question is, you know, what -- is there something there that we should be thinking about as sort of core technology?

Or, Paul, would you argue that the competitive market would solve that, and therefore people might be able to buy different things, depending on what their needs are?

How do we think about the technology stack outside of the actual content of the data, vis-a-vis what is sort of in -- within the scope of core data infrastructure?

MR. O'DONNELL: I think Michael's idea of using the direct feeds to feed the SIP solves a lot of that, because you just pick it up at the point of the exchange, and they've got a compelling reason to make that fast. And then it becomes a competitive issue to distribute that and aggregate that.

I do want to sort of allay one slight misconception that's been mentioned a couple of times in

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the last couple of days about wireless and reliability and cost, et cetera.

So maybe not everyone realizes it, but there's already a couple of people shipping all of this wireless data for most of the exchanges around these three data centers anyway. It's commercially available. It's not that expensive. It is a little less reliable when it rains. But the -- arbitrating that feed versus a fiber feed is a soft technology problem. I think we do it, I'm sure Adam does it. This is not a hard problem.

So I don't want people to go away with the notion, oh, we can't use wireless because it's not reliable. There are ways -- you know, it's an engineering problem to fix that, and it's essentially a solved engineering problem. So let's, you know, remember that as we're thinking about these technologies.

But it does a little bit go to Michael's point we need to make sure that whatever we end up with is reliable. But I'm more confident in the competitive market producing a reliable solution than we have today.

MR. NUNES: Yeah, I guess I would add -- you know, I'd echo what Paul said. I think that there -- you know, during the transition point where early adapters are using things that I think is where, you know, people tend to be most agitated about them. But eventually --

and pretty quickly -- the competitive market solves that problem and we get commercially-available solutions.

I think the second part that I would say is if we start including fiber and microwaves between data centers as being core to what we do, then we should just move everything into one data center. Because at that point you've effectively kind of put under government control or supervision those connections. And we could do it much more reliably by just having it be equal fiber lengths than kind of arguing which microwaves, you know, are okay, and -- kind of mixed standard son that.

MR: PANISCOTTI: I think the good news is that the technology stack is innovating at a rate that you'd expect it to innovate at. And due to a lot of the innovative companies that list on NASDAQ, you know, certainly we love pulling in all of their technology into everything we do. Every day we're basically adding new technology to the stack. And I think you'll find that true in pretty much all the firms on Wall Street who are saying that they need to have data instantaneously. And so they will bring to bear what they need.

Again, today we'll talk about -- we may talk about wireless today, and it's 2018. If somebody cracks some quantum mechanics problem, we'll be talking about latencies that are truly instantaneous, or somebody

figures out how to move neutrinos through the earth, and moves some information. Like, we should stop concerning ourselves, I think, generally speaking, as an industry, with what today's technology is and what's being used, and simply allow industry to competitively make use of what's available to them to actually get the best result that they need, or the best result for them.

MR. BLAUGRUND: I don't want to ever be on a panel again without Dom.

(Laughter.)

MR. REDFEARN: I'd like to address neutrinos.

(Laughter.)

MR. O'DONNELL: I think Adam's already solved that.

MR. REDFEARN: Are there any quantum physicists who can -- no? That being said, so we have --

MR: PANISCOTTI: Well, there are certainly quantum physicists at a lot of these firms, I could tell you that.

MR. REDFEARN: I'm sure there are. Okay. We have about one minute left.

Michael?

MR. BLAUGRUND: I would just briefly add that I think there is a range of different connectivity options that are available today. We've discussed it sort of ad

nauseam yesterday.

I think that the SIPs currently do produce guidance, in terms of what the direct connectivity recommendation is, in terms of how much bandwidth you should expect if you're a direct subscriber. It seems sensible to me.

MR. REDFEARN: Very good. Well, we have pretty much exhausted our time. So before we say thank you to everybody, I wanted to just quickly state to the next panel if you could try to meet over in the green room, which is right where John Ramsay is going right now --

(Laughter.)

MR. REDFEARN: And with that, let me thank you all very much. This has been very helpful. Appreciate it.

(Applause.)

(A brief recess was taken.)

MR. SHILLMAN: Well, welcome back. We'll get started with the second panel of the day. And this panel, as you know, is going to be focused on potential steps that can be taken to improve the governance of the core market data infrastructure. And it's also, you know, the second letter in the TGIF acronym.

So I think what I want to do, just as with the past panel, on this one, since there is a lot of history

on NMS plan governance -- and probably best to take that methodically, separately -- why don't we just start as in the last panel, with having each of the panelists, just in a minute or less, briefly introduce themselves.

So, Kevin, why don't we start with you?

MR. CRONIN: Thanks. Thanks for inviting me here to this important proceeding here today. I'm Kevin Cronin. I'm global head of equity -- or global head of all trading for Invesco. Invesco is a global diversified asset manager with right at $1 trillion under management. I look forward to the conversation.

MR. DE JESUS: So thank you for the opportunity to come and talk about this exciting topic. My name is Hubert de Jesus, and I am global head of market structure and electronic trading for Blackrock. In my capacity I also serve as an advisor to three different NMS plans, including the ones being discussed today. So hopefully I have some experience with advisory committees and NMS plans.

MR. HARKINS: Good morning. Bryan Harkins. I co-run the markets division at Cboe Global Markets. I oversee our equities options, futures, and foreign exchange business strategy. I can say that our foreign exchange market definitely does not have a SIP. So no perspectives there.

MS. KASPAROV: Good morning. I'm Emily Kasparov. Thank you for hosting this market roundtable. I'm currently the chair of the SIP operating committees, and have been since 2015, when I was initially elected. I'm also currently associate general counsel of the Chicago Stock Exchange, which is a division now of ICE, as it was recently acquired. Thank you. It's good to be here.

MR. KETCHUM: Good morning. I'm Rick Ketchum. Dave, as you say, with history, by definition, since I start off with former FINRA CEO, I do history well.

But I'm very pleased to be here. I would note that I continue to have a variety of affiliations, from the standpoint of being a board member and doing some advisory work. But my thoughts today are strictly my own.

MR. MASONE: Good morning. Mike Masone from Citi. Fourteen years with Citi, the first twelve were in Citi's general counsel office. Rick was the head of that for a while. The last two in the equity business, which is the business I covered during the duration of my career there. In addition, I also have the privilege of serving as chair of the SIFMA equity markets and trading committee, which I've done for the past two years. Been involved with SIFMA for about a decade, and serving as

chair or vice chair for the previous four years.

MR. RAMSAY: Hi. My name is John Ramsay. I'm currently chief market policy officer at IEX. Before that it's all a blur. There's a lot of things I've done, but I was privileged to have been in this organization, as well. And as people are probably aware, IEX has a different point of view about a lot of market structure topics, but that certainly includes the topics that we're going to talk about today. So we hope to provide a different kind of exchange perspective on these questions. Thanks.

MR. SHILLMAN: Okay. Well, great. So, just to kind of set us up, I thought I would begin by briefly describing the origins of the governance structure for core market data, which, as has been previously discussed, occurs today through national market system plans jointly managed by the SROs, and how issues began to be identified with that structure as the markets evolved.

Following the Securities Act amendment of 1975, which directed the Commission to facilitate a national market system, the Commission approved three NMS plans filed by the SROs to manage the processing and distribution of core market data. These NMS plans were governed by an operating committee with one

representative from each SRO, and each SRO having one vote. A unanimous vote was required for plan amendments and other significant actions.

In the late 1990s and early 2000s, as the markets evolved to become more electronic and competitive and exchanges began to de-mutualize, some expressed concerns with the governance of NMS plans, suggesting that the management of core data be expanded to include other constituencies, and that market data governance be made more efficient and transparent.

In 1999, the Commission issued a concept release on market data, which specifically requested comment on whether non-SRO market participants should be voting members of the operating committee or otherwise participate in NMS plan governance. Shortly thereafter, the Commission established advisory committee and market information that, in 2001, recommended the participation in NMS plan governance be broadened to include other constituencies, such as broker-dealers, vendors, and investors through the creation of non-voting advisory committees.

And in 2005 the Commission adopted Regulation NMS, which, among other things, amended the NMS plans to establish non-voting advisory committees with at least one representative from a retail broker, an institutional

broker, an ATS vendor, and an investor. It also allowed for individual exchanges to appoint nominees so that that advisory committee has now expanded to include, you know, buy side and others.

The NMS plan advisory committees have the right to submit their views on plan actions to the operating committee, and to participate in all operating committee meetings, and receive any information distributed in connection with those meetings. However, the advisory committees are permitted to be excluded from executive sessions which are held when a majority of the operating committee determines a matter requires confidential treatment.

Since the adoption of Regulation NMS, the markets have continued to evolve, with advances in technology and communications fueling the development of low-latency trading strategies, the emergence of the wide range of proprietary exchange market data products and access services discussed earlier, and the formation of several large exchange groups of multiple SROs.

And the debate around NMS planned governance has continued with some expressing concerns about the effectiveness of the advisory committees, suggesting that their role be strengthened through formal voting rights or other means, and that the use of executive sessions be further restricted.

Questions continue to be raised about the efficiency of the plan's unanimous approval requirements, and the appropriateness of the one-vote-per-SRO governance structure. New issues also have been identified, including whether potential conflicts of interest faced by operating committee and advisory committee members have been appropriately addressed, and whether NMS plan confidentiality policies are interfering with the ability of advisory committee members to effectively communicate with their constituencies.

That's kind of the broad history of where we've gotten to relatively recently. I think within the last year or two the Commission's equity market structure advisory committee, the MSAC, had a subcommittee which looked at some of the issues. Rick happened to be the chairman of that subcommittee.

And to kind of bring us into focusing on what are the current issues of the day, maybe, Rick, you could summarize some of the recommendations of your subcommittee.

MR. KETCHUM: Sure, I'll try to give a brief summary of them, recognizing that these were made two years ago and there has been shifts and developments from the standpoint of the operation of many of the plans

since then.

Fundamentally, the recommendations focused on two things. One was generally focusing on the governance structure in a world in which there had been substantial consolidation of SROs participating in the plans. And secondly, focusing -- recognizing the important stakeholder role of the plan advisory committees, focusing on ways to expand, formalize, and make more uniform the operations there. And that basically came down to a few recommendations.

First, to clarify the process for selecting advisory committee representatives, particularly -- not only to make it more transparent, but particularly to provide that once an advisory committee was set up, that the advisory committee should nominate its own replacement candidates as time went on.

Secondly, to expand and formalize the role of the advisory committee, giving it a clear right to a formal vote before any matter in which the operating committee votes.

And in the event that the matter is subject to a rule filing, that the -- providing that the operating committee should also summarize and explain the results of the advisory committee vote and rationale related to it.

And finally, that the advisory committee should be permitted to initiate its own recommendations to the operating committee, and the operating committee would have the obligation to formally respond to them.

Third, as you mentioned, David, a proposal to significantly narrow the use of executive sessions by NMS plans to -- specifically to only matters that present a clear conflict for advisory committee members, such as matters relating to regulatory compliance or matters subject to potential or ongoing litigation between the advisory committees and plan participants.

And also, while still acknowledging the value of working groups, recognizing the risks from a transparency standpoint of those, and ensure that there was both greater transparency and that regular updates -- and that all action of the working groups had to be formally handled by the operating committee at the end.

Fourth, that the planned limits substantially the plan provisions requiring a unanimous vote to -- both in some issues to two-thirds super-majority and some a simple majority vote for administrative or technical matters.

And, perhaps significant with respect to that, to make that meaningful, revisit the allocation of voting rights among SROs, given the consolidation and the number

of exchange registrations that many of the SROs had, providing generally a rule of one vote per exchange registration -- moving from a one vote per exchange registration model to generally one vote per exchange family, but with provisions that exchanges with substantial market share would receive a second vote.

And I think that's probably a good place to stop.

I will, as I said, note that a number of the plans have responded to these recommendations informally, and I've seen a number of changes to how that's worked that I think are encouraging. Thank you.

MR. SHILLMAN: Okay, great. Thanks, Rick.

So today we have, I think, a healthy tension between the plan advisory committees and the plan operating committee on governance issues. And it might be helpful to hear from Hubert, as member of the advisory committee, and then Emily as chair of the operating committee, just to talk about what issues -- what are -- if you think there's any progress recently in addressing improving governance, and what issues do you think remain to be addressed.

MR. DE JESUS: So, as a disclaimer, while I'm representing some of the advisory committee issues, I do want to note that these views are strictly my own.

I think it's really important to start by highlighting the importance of governance, overall. On the last panel we heard a lot about various solutions that we might see, in terms of technology, to solve issues around the SIP. But at the same time, these are very much point-in-time solutions addressing today's technology, addressing today's business models and conflicts of interest. Without appropriate governance, I think we're going to be here 5 or 10 years from now having this very same discussion.

To start, I'd like to also acknowledge that there has been a lot of -- or some progress that's been made. In my tenure as an NMS plan advisor, the advisors and the participants have worked together to produce transparency around some of the market data revenue allocation, and we've also started to work on policies around such things such as limiting the use of executive sessions.

These are all positive steps towards transparency and being more inclusive in the governance of our NMS plans. But at the same time there is a lot of room for improvement, and there are some very concrete steps that we should take.

I think the underlying thing about NMS plan governance is that there are inherent conflicts of

interest which need to be managed. Exchanges, as self-regulatory organizations, have a disproportionate influence in both the design and the operation of our NMS plans. This authority originates from the 1975 amendments, and the whole concept of cooperative regulation, where the government and industry work together to regulate the various issues.

But exchanges don't represent the securities industry, as a whole. And that's a very important thing to understand. And, as for-profit entities, they make these potential conflicts between their economic interest in the management of their regulatory responsibilities.

NMS plans would be much better informed and more impartially operated if governance was brought in to include a diverse range of market participants, such as broker-dealers, investors, issuers, vendors. Equitable voting representation should be given to such advisors so that they're adequately empowered to make decisions about the NMS plans.

At a high level, I think this is a recommendation that various groups have endorsed. We've seen ICI and SIFMA put out recommendations to this effect. U.S. Department of Treasury issued a notice of this effect, as well. And in a recent white paper NASDAQ also agreed that advisors should get a vote. And I note

that in 2015 the CEO of BATS, or the then-CEO of BATS was also quoted as saying that "having a broker and a buy-side representative sitting at the table voting on plan amendments, I think that's the appropriate structure." So this is something that we have a lot of consensus on, and I feel we should definitely act upon as the next step.

In SIP operating committee meetings we have also been discussing adoption of a conflict of interest policy. The proposed policy, however, only addresses the conflicts which may arise from potential SIP business partners or vendors. So if any one of us has an economic stake or a potential ownership interest in an advisor that the SIP would contract with, that's where those policies are being focused on.

While these are valid concerns, the policy does nothing to address the core conflict between SIP and proprietary data feed interests. At a minimum, procedures to manage these conflicts among representatives are warranted, but actually go one step further. I'd actually ask that we should consider whether the provision of direct data feed alongside a public data infrastructure is consistent with promoting fair and orderly markets.

These private market data products did not

exist when the market data plans were originally established. And today they directly compete with the SIP data feed. Public concerns about speed disparities and latencies due to SIP infrastructure and the public confidence in the two-tiered playing field for market data all arise from the fact that these two feeds co-exist with each other.

Now, this is not a simple problem, as prop feeds carry information such as depth of book and auction imbalance feeds, as we've heard. But what we heard yesterday, as well, was that these feeds are so important to the operation of -- and investment operations that we should ask ourselves the critical question of why these aren't part of our public market data infrastructure.

Should we eliminate proprietary data feeds, and instead offer a core data product over the SIP and a depth of book data product over the SIP? And would that potentially eliminate conflicts of interest and bring the direct data feed models into the SIP governance, or into NMS planning governance? That's a question I think we should definitely be asking ourselves, or we would be missing an opportunity at this critical discussion.

Lastly, I would like to highlight two other concerns that have been brought by the advisory committees. One is the -- and they both affect the efficacy of advisors in essentially providing advice. First is the use of executive sessions, and advisors are concerned that these sessions are not limited to those issues requiring confidential treatment and, as a principle, would, you know, prevent us from participating in discussions and in sessions that really have to do with valid and regular SIP activity.

And the other issue is the scope of confidentiality agreements. At current there are no confidentiality policies in place, but the discussions around the confidentiality agreements seem to potentially limit an advisor's ability to both confer with their constituencies -- so buy sides talking to other buy sides -- or potentially prevent them from talking to representatives within their own firms.

So those are potential concerns there. And I think that's probably a good place to stop.

MR. SHILLMAN: Great. Thanks, Hubert.

Emily?

MS. KASPAROV: Thank you. I am very proud of the accomplishments which have occurred during my time as chair of the SIPs. The SIPs, as you've heard, were created by a limited delegation of authority by the SEC to the National Securities Exchanges and FINRA to consolidate and disseminate specified market data

pursuant to a Commission-approved plan.

What the plan requires, in effect, is that plan participants, who operate competing markets, come together to operate and maintain the market data infrastructure under a framework chosen by you, the SEC.

It is important to remember that this structure brings considerable expertise to this critical process that the SEC would otherwise be forced to commit to this effort. This expertise among the group of, in my opinion, some of the brightest, most knowledgeable individuals in the industry, has led to, among other things, an accomplishment of 100 percent up-time of the processors of market data on both the UTP and CTA sides this year.

My goal upon becoming chair four years ago was to look for ways to improve operating committee processes so that competitors could effectively and efficiently perform their duties under a plan and, where possible, to improve transparency and public confidence around these processes.

During the last few years the operating committee has made significant enhancements to governance. Among the important steps we have taken are decreasing the length of the executive session, as has

been mentioned previously. We've moved the vast majority of agenda items from the executive session to the general session, where advisors can participate and provide feedback. For example, the last executive session, which took place in September, lasted only 10 minutes.

The only exception relates to matters requiring confidentiality that would not be appropriate for broader disclosure.

And Hubert, you mentioned that you are concerned that those executive sessions are not limited to confidential matters. And I would submit that we do vote on the matters that do come into executive session. We justify that vote with a discussion about why they might require confidentiality. And even at the last September meeting, I don't think you all were able to attend, due to another conflict. But at the end of the general session we discuss what would be addressed in executive session during the general session and held our vote there.

In response to industry requests in 2016 for additional transparency of meetings, we summarized our general session meetings on the plan websites for public to view for the first time in the existence of the plans for the last 40 years. Along with the general session summaries we've provided increased transparency of even

executive sessions by publishing the agendas of the executive session meetings to the public. These are on the plan websites.

The participants recognize the increasing value of industry input, and have taken unprecedented steps to increase advisor representation. This was accomplished beginning in 2015 by selecting additional advisors to serve on the committee above and beyond the plan prescribed advisor representatives. Initially, the committee grew from five to seven members. Now, with the addition of more retail representatives, there are 11 members on the advisory committee.

In accordance with the plans, all operating committee actions are reviewed by the advisors prior to those actions being taken.

One of the topics our advisors have championed was increased transparency in the inner workings of the revenue allocation formula. In response, and with the assistance and input from our advisors, we drafted and published a plain-language version of the revenue allocation formula, which is publicly available on the plan websites.

We have heard from our advisors that the SIPs were viewed as inaccessible. So we hired a communications firm to better communicate with the industry and enhance public confidence. In the same vein, we also began to publish revenues for the first time ever.

As you can see, my goal of providing enhanced transparency is clearly making significant progress, but we're not there yet. With all this progress, I personally believe that more can be done. For example, one of the participants, NYSE and my current employer, has now even -- suggesting webcasting the general sessions to provide live transparency of the inner workings of the operating committee. I fully support this initiative.

To foster better relationships with the advisors and communication between the operating committee members, we created new subcommittee structures. The result has been a surprisingly cooperative group of the best and brightest individuals with expertise in each segment of the industry coming together to discuss and resolve issues. An example of that is the distributed SIP subcommittee, which you just heard about in panel four.

Technical improvements have been numerous, and they've been discussed throughout this time. So I will not go into those.

But finally, we have held our first-ever, in-

person visit with the SEC staff. And subsequent visits have continued in an effort to bolster communications and the relationship between the SIP operating committee and the SEC, which I fully support and encourage to continue.

All these governance changes have been accomplished in the past few years under the current constraints of the plans. While the plan structure presents challenges at times, it is important to remember that we are doing something very hard pretty well. UTP and CTA, as I said earlier, have reported 100 percent up-time for this year. We can always do better, and always be ready to do so. But as we consider changes, first and foremost we should do no harm.

I look forward to any questions you may have.

MR. SHILLMAN: Thanks, Emily. So it sounds like a fair amount of meaningful progress has been made in recent years in improving SIP governance. Yet a number of issues remain. Some of those are -- strike me as more -- easier to resolve than others.

And so why don't we try to go through them methodically, and see, you know, how much progress we can make on them, at least on -- in this environment.

So maybe starting with one that might be on the easier side of the spectrum, and that's the idea of the potential conflicts of interest. And one thing -- and

I'd like to start with the one that kind of relates to some of the discussions we had the other -- yesterday about the rise in the offering of competing top-of-book market data products by the three big exchange groups, which I think has raised some concerns that if you have members of the operating committee selling products that compete directly with the SIP, that that could create incentives not to keep the SIP as current as it should be with technological advances, with, you know, pricing adjustments, and otherwise.

So I would be interested to hear -- and we can just go down the line -- of panelists' views on whether they think that conflict is a real one. And I guess, regardless of that, should there be procedures that address those conflicts, either prohibiting them or requiring disclosure, or otherwise? So why don't we start with Kevin?

MR. CRONIN: Thanks, Dave. So maybe an observation. I think we've heard a number of times over various panels that the objective here is to really have a market data fee regime which is fair, reasonable, and not unnecessarily discriminatory. It sure strikes me that in order to achieve such an objective you would need to have a governance structure which was equally fair, reasonable, and not unnecessarily discriminatory. That's

not where we are. Let's be very clear.

With respect to the conflicts of interest, I think it is very clear that there are conflicts that this private versus public data provision regime produced. I would start perhaps with a step backwards and say why do we allow certain market participants to buy an advantage, relative to others?

You know, in the prior regime of exchanges, and despite my young appearance -- I'll go back a couple of years -- you know, at the New York Stock Exchange, for example, we used to complain that the specialists had an unfair advantage. And yet -- and we could debate the point -- they had an obligation, right? So they saw things that not the rest of the world got to see, but they also had some level of obligations that they had to fulfill.

There is no obligation for the people who buy an advantage from an exchange, right? And so I think there's been a lot of talk about how you could bifurcate some of these conversations. The fact of the matter is this, it's the inflated balloon theorem.

If you push the balloon on this side -- so let's say that we expand the SIP and we allow it to have more data fields, don't you know that the exchanges are going to come out with enhanced data fields that will probably further anger people like me, and certainly -- and maybe Hubert -- because it is giving advantage away to opportunistic traders who have no obligation in the marketplace. So I think I start with the fundamental consideration, which is why did we allow that to begin with?

That said, if it's the general agreement of the industry that that's an okay thing, then I think it needs to be governed a lot better than it is today. The conflicts of a structure where you have exchanges, incumbent exchanges offering a competing data product with the public data product is fraught with conflict. And while I submit to you that our industry is not unprone to having conflicts of interest, my best observation of how to manage that conflict is to bring transparency. Not transparency to a bank process, but transparency to a process that actually is more inclusive of the kinds of participants in the marketplace whose voices are important.

So I'll give you an example. There has been some conversation in the various panels about who owns the market data. I submit to you we all own it, and we all have very important interests and objectives that we get out of it. And so, as we think about its public utility and the value of it, it certainly would seem to

be a reasonable step forward to say we will govern it in much more accordance with the people who are -- or participants who are important components of this ecosystem.

So a lot of things said there. I think the conflicts are real. I might take a step back, Dave, and just say, you know, maybe it's a more fundamental consideration. Why are we giving an advantage to some who are willing to pay for it?

MR. SHILLMAN: Hubert, I think you flagged this as an issue, but feel free to elaborate, if you'd like.

MR. DE JESUS: Well, obviously, I agree it's an issue. I think, when you kind of think about some of the things that participants have recommended, they -- we've all been talking about trying to improve the infrastructure of the SIP, and trying to make it faster and less -- introduce less latency, so that there is no difference in speed differentials. And we can do that, and we can try to make sure that there is appropriate metrics available so that we can compare the speed of the SIP versus the speed of proprietary data feeds.

But at the end of the day there is an inherent conflict that if you have two different products, and those two different products are produced using different technology, being distributed using, you know, faster

mechanisms or faster protocols, there is always potentially going to be a difference between the two different products.

And is that a fair and appropriate thing for our markets? I think we should really consider whether those two -- these two feeds should somehow be, you know, put under the same governance framework, or at least merged into the same product.

MR. SHILLMAN: I think both you and Kevin were suggesting that maybe the right approach is to, you know, think expansively about core market data so there isn't this discrepancy, which, of course, would solve the conflicts problem.

But barring that kind of more dramatic move, how would you -- and let's assume for the moment there are proprietary products that remain in the new SIP product. Did you believe -- how would you -- how do you believe that remaining conflict should be addressed?

MR. DE JESUS: Well, as far as NMS plans go, I think, obviously, our perspective there is making sure the voting representation is equally distributed to all market participants.

I don't know if you have any other thoughts.

MR. CRONIN: I think it gets to governance and transparency of that governance, right? So my suggestion

would be that we reconsider the constituency of these committees and make sure that important components of the marketplace have real representation, not advisory representation.

MR. SHILLMAN: Bryan?

MR. HARKINS: Yes. So before going into the conflicts of interest question at hand, I just wanted to kind of follow up on my industry colleague, Emily, here and just -- really, stating Cboe's views at a high level as it pertains to this panel.

So with respect to governance, my -- our -- one of my predecessors, BATS, as you mentioned, Hubert, we were always really pushing the envelope, advocating for more governance. So, without a doubt -- and I think, you know, just over the last few years, some of those governance -- you know, championing for greater governance has resulted in a lot of the improvements that Emily highlighted.

Whether it's technology improvements, resiliency, increased transparency, I do think we're going to talk a lot about executive session today. Really, from my standpoint, it really has been limited. Even things like discussing fees are discussed out in the open.

With respect to, really, just executive

session, I was thinking a lot about what's a healthy amount of transparency and disclosure. Because, you know, you've really got to keep things moving, and there is a lot of different perspectives in any given room. Just even looking at SIFMA's comment letter around ETSN, you know, they -- on one hand, they embrace transparency, but they kind of a little bit warn about some of the pitfalls. And I'll just quote one part of their comment letter, which -- "Increased transparency would require a near continuous disclosure regime, or are so broad in scope or particular in detail as to be impractical or unhelpful."

So look, there's a lot of complicated stuff that's discussed. And really, how much -- I think it's amazing that, you know, really broadcasting it over the web to -- really, just -- there is nothing to hide. But at some point there has to be -- you have to move the ball forward, so to speak, given that there are so many different opinions in the room.

Before I get to conflicts of interest, I just want to kind of address some of the higher-level -- how we view the -- you know, our business, our prior data business, also as the SIP.

As some of the -- of my Cboe colleagues have mentioned, we make a lot more money on the SIP than we do

for proprietary data feeds. So, for example, in the second quarter of this year we made $9 million for our proprietary equities market data, and we made over $25 million for SIP revenue. Okay? So what that means to us is that the SIP, and having a strong SIP, is -- that is core to our business. We operate an exchange, we want healthy markets, we want a strong public quote. So just, really, commercially, we're incentivized to make the SIP -- and we can debate, you know, what is the best ways to make the SIP as strong as possible.

And then, really, just to kind of address something that, Kevin, you mentioned about, really, kind of buying an advantage. It really comes down to what our customers are doing. So we have about 200 members. It may not sound like a lot for a large exchange, but, you know, the industry is fairly concentrated. And only less than half of them take our depth-of-book product. So I don't know what they're doing, but, you know, clearly half of our customers can do business on our platform by using this SIP. So the facts are the facts.

Now, getting to conflicts of interest, look, it's -- we're -- I think one of the best ways to solve it is just disclosure. You know, the simplest thing is when you see an analyst, you know, information about whether that analyst is -- you know, that -- his or her firm is

-- have any sort of underwriting relationship, things of that nature.

Yeah, I do think that conflicts of interest are going to exist. They're going to exist at the exchange level. The operating committee representatives of the exchanges, they speak for the exchange. They don't speak for -- and they don't make any decisions in isolation. They come back to the executive team at Cboe on big policy issues. We talk about them. But, obviously, any type of operating committee representative at an exchange has a unique perspective. They are experts in market data. So I think their perspectives are important.

Conversely, conflicts of interest on the advisor side, let's face it, they exist, as well. How should the advisors be -- what should they be expected to disclose? So the particular advisors, what business does he or she oversee? What are the expenses driving those businesses? Because again, we're all conflicted at the end of the day. So, in short, Cboe does favor disclosure around conflicts.

MR. SHILLMAN: Thanks. And let me just follow up on a couple of things. I think you indicated that -- open to conflict of interest policies that require disclosure of conflicts.

But let's say there was the example where the

exchange rep actually was involved in the business of selling the competing top-of-book product, or somehow financially tied to that. Do you think disclosure would be enough? Or would you support walling off or prohibition of the exchange reps on the advisory committee having an economic or other interest in the success of the competing top-of-book products?

MR. HARKINS: I mean I think it -- it's a tough question to answer. But I would say, you know, we're -- as a whole, even though -- you know, it's kind of related a little bit to giving advisors votes, which we -- you know, we think is a step in the right direction. But it really does come down to, you know, okay, what is the motivating interest.

And, you know, so I don't think we're in favor of limiting our -- you know, our abilities under the plan. So kind of -- you know, whether that's making sure that we can't vote a particular way -- but, I mean, I -- it's hard to solve that because, you know, yeah, we run a proprietary market data business. Whether that person is, you know, recused from that particular vote, it's not going to -- you know, again the exchange operator, as a whole, is going to make the decision, not that particular person.

But with respect to things like access to data, I mean, that's a no-brainer. We shouldn't be combing through data to help, you know, glean information that we can use to sell our proprietary data products. That's definitely a no-brainer.

MR. RAMSAY: Could I just clarify something? Because I took your question, Dave, to be should the -- not a question about whether exchanges can have representatives that can vote on a particular matter or not, but should the designated representatives by the exchanges on the SIP committee, the individuals who have responsibility, align responsibility or benefit in a direct commercial way from these proprietary data products. Was that --

MR. SHILLMAN: Yeah, that's right. It was the personal conflict.

MR. RAMSAY: Thank you.

MR. SHILLMAN: And I don't know whether your views change in that --

MR. HARKINS: No, I just think that -- I mean I'm not trying to skirt the question. It's more of we make more money on SIP. That's why I led with those opening remarks. The -- we -- whether it's me or somebody who is -- you know, works for me, we're going to have the same view as how we want to run our exchange. So the person is not going to matter.

So even if that person is not in the committee -- and, by the way, I said they -- you know, market data professionals add a lot of value, just given their subject matter expertise, but it's not going to change the exchange's view, because we make a decision for what's really best for the industry and for our exchange, as a whole.

MR. SHILLMAN: Kind of following up, another thing you mentioned is, you know, your representatives on the operating committees, you know, represent the exchange appointed them. That's their duty.

And I guess another question for you and others as we go down the line is should it be that way. Should we look for a way -- you know, given how critical core market data is for the investing public -- and I think there is a lot of talk about being a public good -- should there be some -- we look for some way to try to create an obligation for those who are on the operating committee to act in the best interests of the plan and -- rather to try to address the concerns, real or perceived, that conflicts among the exchanges are undermining the quality of the, you know, critical core market data?

MR. HARKINS: I mean I think I answered in the sense that, you know, we're -- we have a vested interest in making sure that the SIP is as fast as possible,

resilient. I don't know how -- I guess I don't understand your question, Dave, in that --

MR. SHILLMAN: You're also selling a product that competes directly with it, and it's priced less expensively, and has less administrative burden, and is growing, and you're seeking regulatory relief to expand that. So some would view that as a conflict with the success of the SIP product.

MS. KASPAROV: I would then ask how has that practically impacted the committee to date. We have made significant enhancements to technology. The SIP is better now than ever. We produce more data. Our capacity is higher than ever. And we work well together, right?

I, personally, have not experienced a conflict of interest in representing the two different participants that I have been involved with since my time at the plan. And personally, you know, like you've said, we all have these tensions that are inherent in the Reg NMS plans, correct?

But at the same time, we've got the best and brightest in the room. We've got Paul O'Donnell from Morgan Stanley, who is clearly conflicted in his viewpoints. We've got Jeff Kimsey from NASDAQ. We've got Michael Blaugrund. But these are also great minds

that all come together to make the SIP better. And you can see from our historical advancements that we've done that.

You know, talking specifically about conflicts of interest, we have considered policies, right? We've talked about them a lot. John Ramsay has been a big proponent of that.

MR. RAMSAY: You didn't include me on your list of great minds on the SIP committee.

(Laughter.)

MS. KASPAROV: But John, you said your history was a blur. How am I supposed to know what you've done?

You know, the plan is silent, though. When we have an issue that comes before us, we looked at the plan for guidance. That's something you learn in law school; you go into the statute to find out what your obligations are. We go to the plan. The plan is silent. It provides that participants are permitted to select a representative. That is the participant's choice under our current structure.

And I would submit that we do have checks and balances because we don't always agree, right? We have competing viewpoints, but at the end of the day it's a good thing, right? We have a unanimity requirement for voting. Some say that that's a frustrating requirement.

Some say it makes governance inaccessible, governance is broken, you can't agree. But I would disagree with that because it is important that when we make a change to the plan, that -- in my opinion -- we all agree.

That's one of the most important things that we do. And if we can come to agreement on how the plan should function, then that's how it should function. So these tensions, though sometimes they're frustrating, to me are beneficiary under the current structure.

MR. SHILLMAN: Okay. And just one more question before we move on. I said initially, you know, these -- the impact of these, you know, perceived -- it could be perceived or real. But let's assume that it really has had a material impact on, you know, the operation of the SIP. Is there any downside to dealing with the perception by addressing some sort of meaningful conflict management procedures at the plan level?

MS. KASPAROV: Well, we've considered that, right? We've considered varying degrees of what conflicts really are. Is this really a big deal, right? We've operated for 40 years -- more than 40 years -- without a conflict of interest policy. They were considered in the 2004 Reg NMS adoptions.

It's difficult to pin down the choice that the operating committee should make in that instance. But

that said, this is where, you know, we operate under regulatory oversight. To the extent that the Commission feels that that's important, we welcome your input and in the rule-making realm, as well.

MR. HARKINS: Dave, one more thing. I just wanted to -- just to be more clear that, yes, we do sell proprietary data products, but it doesn't change the fact that Cboe and, prior to Cboe, BATS, we were always an advocate for stronger governance and even -- I see Paul O'Donnell sitting there. You know, his name keeps coming up. I mean -- you ask him, like, how -- who has really tried to push the envelope.

And we're very proud of our history in performance, resiliency, pushing -- we don't operate the SIP, you know, we're a plan participant. And our competitors operate the SIP. But we thought it was important. And I think, honestly, through, you know, the appointment of advisors, you know, former BATS at the time, you know, whether it's voting rights, things that we still embrace, it doesn't really matter that we operate proprietary data feeds, because our track record is still there.

MR. REDFEARN: Just a quick -- so I would concur in some respect with what Bryan said, because it is known that you did bring these issues before the

committee about -- you know, about other -- you know, expanding and voting at some point, so that's appreciated.

I guess the conflicts question -- you know, the questions that we get when people come in to see us, some people have said things like the discussion we're having now about a distributed SIP, or why aren't these things going directly to the data center, the private market figured that out, you know, 10-plus years ago. And the SIPs haven't really paid attention to that until -- there's been a lot of sort of increasing pressure on that: Why didn't that happen?

There's questions about -- and I know yesterday there was a comment made about a separate competing product that saved investors $200 million or something like that over the past 3 years in conjunction with another statement that revenues have remained flat, right? And so the perception by some might be that the SIP lost a lot of customers, and revenues stayed the same way, they were just shifted to other parts there. And so there's a question, then, about that, like, to what extent does that potentially reflect -- if you lose customers, why are revenues staying flat or shifting to other parts? And so what is the thinking that's going on there?

So that's part of the -- you know, the view of this is, you know, are there people -- are all the people there people who are really focused on how do we make this a really good kind of competitive product?

But I don't think that it's a -- you know, we don't want to just put all of the onus on Bryan and Emily here, so why don't we kind of move down and let Rick, Mike, and --

MR. KETCHUM: Sure. Look, I think two things. Well, maybe three.

First, Emily and Bryan should feel very proud of how the SIP has evolved in the last -- certainly the last three years and, I think, dramatically improved.

Obviously, governance, with respect to a plan to raise a wide range of different plans and different states of maturity, I -- and there are a lot of conflicts. The proprietary products is certainly one. Other exchanges are substantially controlled by other members of the -- by the broker-dealer side of the community, and that's a different conflict from the standpoint of things. It should be recognized, as well. Industry members obviously have conflicts in a variety of ways.

But I think I'd say a couple of things. One, disclosure should be simple, from the standpoint of making it clear. My preference would be -- and I think this could be managed from the standpoint of how the exchanges compensate their employees -- that at least there should be balanced compensation from anybody who's on the operating committee so that the performance of the SIP is at least as important as operating products from a profitability standpoint.

The third thing, David, I would hit to your point, which I think -- forgive me, I think I'm still a lawyer, so I'll try to take a run at this. But I do think that the responsibility of the members of the plan is important for -- and could use additional Commission articulation.

One of the reasons we actually did not recommend a vote -- through I'm open to it -- a variety of good reasons -- a vote from the standpoint of the advisory committee, was the fact that, at least indirectly, the Commission can hold responsible SRO participants in the plan from an oversight and legal standpoint.

I think it would be good to make that clearer, as you suggested. And I think the -- Bryan reflected -- and has done a magnificent job here, but he reflected I think the way exchanges and FINRA have viewed plans forever, which is that we reflect -- we're voting and

we're reflecting the positions of our marketplace, or our SRO. We do -- we've dealt with this conflict for years in SROs, with respect to industry participants in the board, and spent a lot of time lecturing that when they walk into FINRA's boardroom or New York Stock Exchange's boardroom, or NASDAQ's -- it's the three entities I've participated in -- they take on discreet fiduciary responsibilities from that standpoint.

And I'm not naive enough to believe that they lost their self-interest from the standpoint of being a broker-dealer. But I think, legally, having that fiduciary responsibility is important. And I think it would be good for the Commission to consider that, both with respect to the possibility of adding additional persons -- please, if you're going to add industry people, add a public representative, as well.

And also, from the standpoint of articulating that the members have that responsibility as plan participants -- and I think most of them think they do already -- but I think it would be great to articulate. And none of this is to in any way be derogatory on the terrific work that many industry people have done and many exchange people have done with respect to the plans.

MS. KASPAROV: If I could just interject really quick, that is true. There is no current fiduciary

responsibility of the participants or the advisors to the plans.

Secondly, if you're talking about compensation, are you considering compensation to the chair? Because I would be open to that.

(Laughter.)

MR. KETCHUM: I think that would be great, Emily.

MS. KASPAROV: That would be -- that would -- you know, we can talk about this.

MR. KETCHUM: Anything I can do to help.

MR. MASONE: Well, let me just reiterate Rick's thoughts. And I agree with you, Emily. I think you should be proud of the work that the operating committee has done, especially in the past few years. I think you're doing -- and the others on this committee are doing -- the very best that you can within the construct of a flawed system. And so I think that's the point of kind of addressing this, you know, here.

It's difficult for me to say, with all the great minds to my right --

(Laughter.)

MR. MASONE: -- who have been looking at this for so many years, it's really difficult to really add too much more than the work that's been done in this

particular area for the course of a couple of decades now.

But let me just state the obvious: this construct that was established 43 years ago was at a time where exchanges were member-owned. We didn't have to worry about these conflicts quite as much as we do now, when in the past 13 years or so -- since Reg NMS -- exchanges have become for-profit entities that answer, rightfully, to their shareholders, not to the broader market. That makes perfect sense, that exchanges should act -- and they are acting -- in very rational ways to maximize profit for shareholders. But that system itself, this sort of quasi-regulatory, fully commercial nature of exchanges is really what's at issue here.

And so, what we're trying to do is modernize a structure that seems to many of us to be antiquated, for either real or perceived reasons.

I thought Isaac Chang did an excellent job of framing this on the last panel, when he pointed to Michael Blaugrund on his right. All of us are in agreement that the people in these seats mean the best, that they mean well, they're doing the best that they can. It's just that they're in an awkward position, and it's awkward not only for them, but for the entire industry.

So what can we do to resolve that? I think this, of all the panels that we're discussing at this two-day roundtable, it's probably the lowest-hanging fruit. You know, I think there has been a litany of support for some reform, modernization of the governance structure. Hubert ticked them off. I would just add a couple.

You know, I think there is obviously the MSAC recommendations that Rick's subcommittee made, there is U.S. Treasury and their capital markets report. There is the advisory committee and their recent recommendations. Certainly SIFMA and Citi have made recommendations to this end, as well, for many years now. There's Hal Scott's committee on capital markets. Even NASDAQ has made, you know, some tip of the hat, a nod to the fact that there needs to be some reform to the process. Though not everybody has gone as far as SIFMA and Citi, but I want to make it unequivocally clear that, short of actual voting representation on the operating committee, we don't think we are addressing this issue.

And it is not, well, you're chair of the operating committee, because I'm wholly confident that you're doing the best job that you can. What I worry about is the future, and the future that, you know, our kids, the markets that our kids inherit.

And it exists in this NMS plan, and it certainly exists in other NMS plans. Look no further than the consolidated audit trail which, six years post its adoption by the SEC, has still not implemented for many of the same types of reasons. I think the --

PARTICIPANT: Just off limits for --

PARTICIPANT: Yeah, please, please.

MR. MASONE: So there are a number of things that I think we could probably do in short order that would at least get this house in order. Because, otherwise, I don't believe it could stand.

MR. RAMSAY: So I would echo that last point, the point about the folks on the committee. I mean I count Emily as a friend, other good people.

I think there are conflicts of interest that can overwhelm the best interests of -- best intentions and efforts of good people to deal with them. And I think we have that situation.

I -- from being on the committee for two years now, I have seen tangible cases where conflicts of interest have impacted the work of the committee, I think, in ways that undermine the public good that Isaac was talking about, and that we think that the plans are -- that should be the objectives of the plan. So those play out in a whole host of ways.

Dave, you mentioned the competing prop feeds. That certainly is one of them. I think there is a category of issues around how useful can the SIP feeds be for trading purposes, or particularly in -- where you have questions of competition with directly competing feeds.

Another question is auction data. For over a year I've been pushing to try to get auction data added to the SIP that would make it somewhat more useful as -- you know, and I was glad to see Michael on the last panel say that they favored this now. But I would note that the New York Stock Exchange already provides some imbalance feed on its own on CTA. It has for many years. And the trouble that I have is I haven't been able to get the committee even to squarely ask the Commission for an interpretation that would say, yes, you can do this, even if you've got a majority vote. So it's kind of easy for him to offer it, knowing that, you know, there is at least one or more exchanges that will say, well, it requires unanimity, and therefore it's not going to happen. So that's one case.

The -- another involves just the ability of anybody else to compete for the role of the processor. It is -- you know, it makes no sense in either a utility or a commercial setting to have a situation where, you

know, the listing markets control the processor and nobody else can really intervene.

In fact -- a lot of people may not realize it -- on the CTA side there is not even a provision for somebody else to potentially bid to become a convening processor. I mean I've heard of a situation not that long ago where another company made an inquiry about, you know, sort of how do we -- if we were interested in making a bid to become a processor, how would we go about that. And the awkward answer was, "Well, there really is no process for doing that." That just -- that doesn't make any sense.

I think, in terms of the committee process, I have pushed as well for two years to try to have some kind of basic conflicts of interest policy. I would certainly argue at the outset that it should not be a stretch to say that exchanges should not appoint people to this particular committee who have direct-line responsibility for proprietary data. But, you know, short of that, I've just been pushing for some policy that would say this is how we should try to manage these conflicts of interest.

Now, the latest answer that I've heard is that people are taking the position that the plan doesn't provide authority for such a policy, again, without a unanimous vote and a change to the plan. That's a position that seems to me more a sort of question of convenience than it is a matter of legal principle. But I think that's another case where there is a real -- and then fourth, just transparency in terms of various things.

I mean, so NYSE is proposing that the SIP committee meetings all be televised, which I have no problem with. I think it would be the dullest viewing experience in the history of broadcast media, but, you know -- but I don't -- but in terms of really meaningful things, we don't have transparency still about how much fee income is actually collected from the public to the plans.

And I think the reason that we don't have that is if people knew that information, they would know how much is actually being reinvested directly in the processor in the SIP versus how much is distributed out to other folks. I think there are -- you know, there are other issues around transparency that we ought to -- I think we ought to consider.

So I really do think that these issues sort of permeate all aspects of the plan governance. And without some basic, fundamental change in terms of the composition of the committee, the voting committee, and

the constituencies that are represented on it, I think, again, they will continue to defeat the best efforts of good people to sort of deal with these questions.

MR. SHILLMAN: Okay. Well, thanks, John. So we spent a little over a half-hour on what I thought would be one of the easier issues. So let's try a tough one, and that is, you know, should advisory committee members be given an actual vote on the operating committee.

And what might be a good way to tee it up -- maybe for those of you who favor giving advisory committee members an actual vote, just hearing why you think it's important to do that, what you think it would add, and why that's something that could not be accomplished through other improvements to SIP governance, and then how you think that should be implemented.

And maybe we start at John's end of the table this way, and --

MR. RAMSAY: Thank you.

MR. SHILLMAN: I'm assuming you'll be one of those advocates.

MR. RAMSAY: I am one of those advocates. I don't -- I mean I think there is a lot of different ways that you could slice it. I think that the -- I should

say -- I think a vote to the advisory committee -- I think that -- I mean I would create a balanced board sort of structure of the type that is already in place for the exchanges themselves and for FINRA for a long time, in order to deal with similar kinds of conflicts of interest.

Now, I think that the advisory committee itself could serve as a useful pool of people from which to draw representatives of different constituencies. You have the practical problem, you have to figure out how do you constitute the advisory committee in the first place. But I think once it's appropriately constituted, you know, some means by which advisors can self-select among themselves both their successors and people that would have that kind of voting responsibility or voting seat would make some sense.

So I would -- you know, rather than say just -- you ought to have one sell side, one buy side person, I would say you ought to have the vendor community represented, you ought to have -- make sure that the retail community is represented, and individual investor, at a minimum, represented. I think all of that ought to be on the table.

MR. SHILLMAN: Mike?

MR. MASONE: So we're certainly in that camp,

speaking on behalf of both Citi and SIFMA in this thinking that, you know, opening the operating committee to voting representation is key to this whole discussion.

You start with the problem. I mean, as I mentioned, there is, you know, this inherent conflict. As currently constructed, the SIP operating committees have 14 SROs, 14 votes, 13 equity exchanges in FINRA. Of those 13 exchanges you've got 12 that are controlled by the three major exchange groups. And of those, 8 of those 12 votes belong to the 2 families that operate, the two major SIPs.

So right away, you've got a majority of members belonging to the two, you know, SIP operators. So, without belaboring the point that that, in and of itself, creates conflict, how do you resolve that?

And so our recommendations to date have been to allow for one asset manager, one broker-dealer to be represented on the operating committee, with full voting rights. As John mentions, there are other constituencies, other types of market participants that could belong. We would have no objection to opening it up to broader representation. I think our starting point, at a minimum, was just, you know, instead of 14 votes, let's have 16, and just involve some of the other members of the community.

Part of that, as all -- you've probably heard the word "transparency" as much as you've heard the word "governance" during this panel, and the two are inextricably linked. Without stealing the thunder of the last panel here, you know, part of the reason why we're looking for voting rights and seats on this operating committee is so that we have a view into what actually goes on and it's not subject to executive -- use of executive session or other means by which, you know, the committee can sort of operate in the dark. And so that's why we've suggested a minimum of two seats. We'd certainly be open to more.

Some of the criticisms that we've heard -- because we've certainly brought this to the Commission in the past -- we've heard a few things. One is, you know, a concern or a fear by exchanges that, you know, the brokers are just looking to kind of gum up the works. And nothing would really get done. I mean that is far from the truth.

And I think, to the same extent that we trust the people in the chairs now, and the integrity of those people -- would appreciate the same in term. You know, that's not the goal here. The goal is not to just obstruct progress, or obstruct the ability for the operating committee to get anything done. The goal is

really to add a level of transparency and inclusion to the process itself.

You can address ways to prevent, you know, stagnation, and you can do that through the voting structure. And so I think that is easily dealt with. Similarly, we have heard concerns about, you know, how are we actually going to choose the members? Who are the right members to be reflected on the committee? That, to me, seems to be the easiest one to address, and one where we don't have true religion.

You know, whether -- there's a number of different solutions to that that I don't think conceptually should stop this from moving forward as an idea.

MR. SHILLMAN: Just one follow-up. Assuming, for sake of argument, the executive sessions could be limited to very narrow circumstances, and the informational issue was solved, would you still need the vote?

MR. MASONE: You know, I think -- the short answer is yes. And I think until you have that vote, I'd feel that we -- you just don't -- you're not on par. And there is probably valid reasons, from an exchange perspective, why you wouldn't need to be on par. You don't have the same regulatory responsibilities.

I think Rick's subcommittee and their recommendations gave a nod to the fact that, you know, they're aware of the potential statutory and regulatory limits on permissible NMS plan participants. You know, there are legitimate reasons that we'd need to address. But we are the ones who are paying for this, and we're paying for it on behalf of -- I think, to the chair's point and to all the commissioners' point -- say on behalf of the end investor, and that's really who needs to be represented in this construct.

MR. SHILLMAN: Rick, I suspect you're somewhere in the middle, but do you want to --

MR. KETCHUM: Like Billy Martin, I feel very strongly both ways.

Yeah, I think I probably am. I would say first make the changes that the equity advisory committee recommended. You will create a much less loaded and controlled voting situation than you have now. You'll address the unanimity. Collegiality is a wonderful thing with respect to every board, should always be sought. But boards work well because they seek collegiality, but they can vote if they disagree, and then not block from a unanimity standpoint.

So I think all those things should happen, and I think with the constriction of the executive committee,

that it would, without more, work quite well.

I don't -- well, I don't personally have any objection at all to the addition of the -- of providing someone from the advisory committee with a vote in the plans, as long as that was balanced by adding someone representing the public having a vote. But I do think that anyone who participates in that, one way or another, has to have accountability that the Commission can hold them to, from the standpoint of their responsibility with respect to the plan. So I think the Commission would have to work through that with respect to non-SRO representatives. And as I said before, I think it would be better for it to be a little clearer from the SRO representative standpoint.

But I think that would happen first. But I would not object to that.

MR. SHILLMAN: Well, why don't we keep doing down in order? I recognize you're going to have different views, but let's just --

MS. KASPAROV: Who says I'm going to have different views? Actually, it's not that different. I think that the current structure has been sufficient to where we are today.

Adding a vote of the advisors, we can discuss that, we're open to do that. I think it is a falsity that the advisors have no say. We run everything past the advisors. We talk with them. They are part of bringing the ideas to us, in many cases. They are part of the subcommittees where we address them. We have spirited conversations about how to move forward in the best way possible. We don't do anything before we run it through the advisors.

One example of that is actually the conflict of interest policy. And over the past year that we have really focused on this issue, we have come to the committee with various different proposals. And I say "we" -- different organizations have brought different ideas to the table. There hasn't been agreement. The past conflict of interest policy that we just recently considered wasn't agreed to by the advisors. It was up for a vote that day. We didn't vote. The advisors didn't like it. We were not in agreement amongst the whole committee.

So you know, I think they really do have an impact, I think they do have a say, and we really value their say. Giving them a vote? We can talk about that. It sounds like some of the participants are now supportive of that today, you know, and we can talk about that going forward.

But again, going back to my initial statement,

we should be careful to do no harm, right? The advisors don't necessarily have the same constraints that a self-regulatory organization has. Like the joyful Chris said yesterday, Chris Isaacson, you know, he mentioned that we are on the hook, as SROs, to administer the plan by the plan's language. We get in trouble if we don't do it right. So if you give advisors a vote, you also have to consider what are their obligations, as well.

I wanted to just make a couple of remarks on something that John said. Regarding the auction data, we did consider that and we have gone to the SEC for advice on our next standpoint. And I know that you've also provided a comment letter, as well.

The competing role for the processor, that's not something that's really been brought, as a formal matter, to the operating committee. I think that's a good idea. We can consider that, if someone formally brings it to the operating committee. But I wouldn't say that it's a conflict of interest that's been holding it back. And if you look at, for example, SAIC's numbers, they've been doing a really good job for a long time.

That's all for now.

MR. SHILLMAN: Bryan, what would angry Chris say?

MR. HARKINS: Yeah, I'll just -- I'll be brief.

I will be brief --

MS. KASPAROV: Sorry.

MR. HARKINS: -- in that, you know, like, our position hasn't changed. We were always advocates for votes and advisors.

But I'm -- there's one thing that's missing. Emily talks about the obligations that the exchanges have. We're not an operator of the SIP. But everything that we do as an exchange, the byproduct, the downstream byproduct, is spitting out our data that the public and the investment community relies on. And, yeah, we -- it's -- the stakes are high when we have a failure.

So I guess I flip it back to Michael. We want the same things, which is to improve the markets. But I'm not hearing what the obligations are that the advisors would have with that vote.

MR. DE JESUS: So why do we need a vote, right? Well, we need a vote because advisors don't have enough of a voice in the governance of the NMS plans. We can raise issues, as has been properly kind of highlighted. But the exchanges can actually table those discussions for future meetings, or they can choose to address those issues in a slightly different way. The conflicts of interest policy that was discussed, for instance, doesn't go far enough, from the perspective of advisors, right?

And so, you know, you ask for a policy, or you ask for a particular enhancement, and it comes back to you in a slightly different form, which isn't exactly what we wanted or asked for in the first place. And that ultimately means that the plans are not operating in the way that the advisors are asking the participants to operate the plans.

I think voting rights should probably be balanced. So I hear a lot about one vote for the advisory committee. I think it actually should be bigger than that. It should be probably more of a 50-50 balanced voting representation. An advisor should probably be selected in an independent fashion. There is a risk that if advisors are selected by participants, that participants could potentially choose not to renew an advisor, or kick an advisor out if they're not going according to the exchange kind of interests.

And as far as accountability, what are our obligations? Well, basically, we fund the SIP, right? It is our market data costs and our market data revenues that basically pay for this whole infrastructure. So if we're going to talk about liability, how about we take some of those revenues and basically portion them off to pay for any kind of liability or insurance that we may have in not being responsible in operating the SIP?

MR. CRONIN: I largely agree with that. I think maybe I would add -- first of all, I wanted to answer your question. Yes, it's a conflict of interest. And yes, it should be addressed. See, that wasn't that hard, was it?

(Laughter.)

MR. CRONIN: So I think, when you look at this issue, at least I'm struck by the fact that, you know, there's a lot of obfuscation that goes on. And I just don't understand why you couldn't submit that the industry voice is really important to try to get this right. Not just for today, but as we've heard, over the next 5, 10, 15 years, whatever that ends up being.

And to suggest that there shouldn't be some role for all elements of this in this conversation is just ridiculous to me.

Now, the question is how do you really facilitate something like that. And maybe there is some way to negotiate this. There is the how versus the what. And I think, from at least the general public's perspective, understanding the what is really, really important.

So, for example, what should be part of core market data, right? So we've heard a lot of conversation around that. I think there should be a group of people

who are responsible for saying -- maybe it's the SEC -- this is core data. These are the things that investors need today and most certainly in the future.

If anyone thinks that people want the same amount of information or less, going forward, to be an investment manager, to be an effective retail investor, you're kidding yourselves. Data is everything now. So we need to be facilitating everything we can right now to being able to pull more data to the point of sale to clients. That's one issue.

The other would be, okay, so if you're going to operate separate fees, private and public, who sets the standard of what the VIG is and delay one to the other, right? What is an acceptable amount of latency? Who sets that? Who holds the standard? So I think there could be some level of the conversations and ultimately maybe the policies where you would have higher representation from the industry.

And then perhaps in the sausage making you don't need so much of that, but I do think there's a lot of importance and a lot of value in having much more interaction and participation from voices that are just not part of the conversation today.

MR. SHILLMAN: Okay, thanks, Kevin. So why don't we shift to executive sessions, which is, you know,

as has been discussed, the advisory committee has full rights to access and participate in operating committee meeting, except when a majority calls an executive session for matters that they deem require confidential treatment. And that's kind of a broad term.

Certainly we have heard expressed concerns that executive sessions are being over-used. And certainly I take your point. I think we have observed that the use of executive sessions has narrowed. And Rick's subcommittee made specific recommendations along these lines.

I guess my question to the panelists is, in practice is there more than needs to be done in limiting executive sessions from -- given the narrowing that's occurred to date, is there more that still needs to be done?

And then, secondly, from a -- just reducing that to writing, should a policy be developed that actually sets forth those, you know, narrower circumstances under which executive sessions are appropriate?

MR. RAMSAY: I had my light on first.

MR. SHILLMAN: Or we can start in the middle. Let's start with Emily and we'll go left and then --

MR. RAMSAY: Okay.

MS. KASPAROV: I'm going to hear about this later.

To the industry guys, we have heard you, right? We have really looked at how we use our executive sessions. And yeah, they were probably at a time being overused, right? So we've really limited it. We've brought a lot of transparency around it.

We still need it, though, right? We've got audit findings that we discuss in executive sessions from our vendors. That would not be appropriate for another industry member who might be in competition about that, who might be part of those findings. That would not be appropriate for them to be part of that discussion.

We also need a place to talk about any litigation matters that would come before the plan and would need maybe a vote of the operating committee participants itself. So we do, in those examples of circumstances, need an executive session.

That said, we do have a policy that has been passed around, and I actually -- pending any changes that any participant might decide to make -- I actually think it's pretty close to being passed before the committee. That greatly narrows and describes in what circumstances we would use executive sessions. And I think that would be helpful.

In practice, I think we do a pretty good job. But as Mike said earlier, right, that's during this time of the reign of the chair, which is up for vote in February. I don't know. So who knows how long that's going to be?

MR. MASONE: Emily, if you gave brokers a vote, I would vote for you.

(Laughter.)

MS. KASPAROV: All right.

MR. RAMSAY: Two.

MS. KASPAROV: All right. Now I've lost my train of thought. But like I said, you know, I think they are needed, but this is kind of what Mike said. This is low-hanging fruit. This is something that we can kind of, hopefully, put down to writing about the limits that we can put on these executive sessions.

MR. SHILLMAN: Just to be clear, the policies that you're talking about, does that limit executive sessions to audit findings and litigation, or is it broader than that?

MS. KASPAROV: Gosh, I didn't bring it with me, but it was pretty descriptive of the uses that the plan participants have, and I believe the SEC has those policies, those draft policies, as well.

MR. RAMSAY: I think I have an answer to the

question.

MS. KASPAROV: Okay, great, please. They're probably not good enough --

MR. RAMSAY: I haven't committed it to mind, but I think the problem is that the policies that have been talked about always leave the big carve-out at the end, right? You know, executive session will be limited to audit findings, regulatory matters where there is actual ongoing litigation, where you need a confidential discussion, or other matters that the committee determines require confidential treatment. And at least in the past -- and I will give the committee credit in recent months for limiting the ways in which that happens -- but the committee has not obligated themselves to continue limiting it in that way, going forward.

And I think there -- I have witnessed cases where matters end up in executive session because they're sensitive, in the sense that the committee members might come under criticism from folks in the industry, rather than it's really so much a direct conflict of the type that really should require executive session. That's my perspective.

MS. KASPAROV: Maybe we're not quite as close as I thought.

MR. SHILLMAN: Bryan, do you have any views?

MR. HARKINS: No, I just -- I think it's just important to -- you know, one of the themes here was what are issues of today versus issues from a few years ago. And yeah, I mean, Cboe, we support limiting executive session, especially in the instances Emily -- those are all definitely no-brainers to improve trust, transparency. Again, unless there are more specific things that I'm failing to think about, I think we've really greatly improved.

MR. SHILLMAN: So, Hubert, you've seen it from the inside. You've seen the procedures and the consideration views on what you're talking about right now.

MR. DE JESUS: I mean I think there's been more progress to date on executive sessions and their -- than maybe the way it was used in the past. So I would agree with Bryan and Emily that it's gotten better.

You know, the carve-outs are, obviously, concerning. So it -- to the extent that we know more about what's going on in executive session, or that the -- as the participants start to provide that visibility or transparency to us, that would help a lot in understanding what's actually happening there. And I know recently you've started to do that, as well.

I do think, going back to the last topic, a

vote would fix this problem. So we would be in the executive session. So --

MR. CRONIN: Yeah, I think I agree with that. And again, we're back to our friend, transparency, although I am struck by, again, this notion of transparency of a broken process. I don't know it really gives people a whole lot.

I would suggest that the governance structure, again, would try to better incorporate people who have important opinions and views in the marketplace, and you know, frankly, I recognize there's a need for executive sessions at some level, but I do think that there should be some litmus test from those people on the governance committee around whether or not it would warrant that kind of consideration.

MR. REDFEARN: Just a quick question. I know at one point they had executive committee meetings where they were outside of the operating committees. Just executive committees would meet, all of the members of the plan, not including the advisors. Are there still executive committee meetings? Do they still exist?

MS. KASPAROV: There haven't been to date. I -- in my memory, I think that there were some executive committee meetings surrounding the selection of NASDAQ as the processor, and that had to do with contract negotiations, which were -- you know, there was a meeting schedule set out in the actual contract and the process that we ran during that time, whereby the executive committee met. But since then, I'm not aware of a meeting that has occurred without the advisors being aware of it.

MR. SHILLMAN: Mike, did you want to add anything to that?

MR. MASONE: I would -- I mean, as I listen to this, just think to myself that, as regards voting, I'm having a hard time trying to think back through history of a time where expanding the vote and enfranchising other groups was ever a bad thing. I just can't really think of an example, especially among reasonable market participants in an industry that is supposed to be self-regulatory.

I just feel like we're on the wrong side of history here, and it's a pretty simple -- you know, it's a pretty -- it's an overly simplistic view of it, but when you think about the standard to which our regulators need to hold this segment of the market, fair and reasonable, not unreasonably discriminatory, you know, it comes back to transparency. It comes -- and the ability to determine whether something is fair and reasonable or not unreasonably discriminatory is dependent upon

actually having the full panoply of facts in front of you. And unless you're really part of a decision-making process, you don't.

MR. SHILLMAN: Thanks. I think, for what will likely be out last topic, assuming -- you know, putting aside should advisory committee members be given a vote, is the current voting structure we have for the participants the right one?

You know, as was discussed, that was done in a very different age with, you know, mutual member-owned exchanges, dominant markets, not the same level of competition, no prop data feeds. Now we have a world where we have three large exchange groups with multiple votes, depending on the number of exchange licenses they hold. Should exchange licenses really be the way that voting power is divided up among the SROs that have the regulatory responsibility?

And again, Rick's subcommittee had some specific recommendations on this, but it would be interesting to hear other views. I know -- Kevin, do you want to start on your end?

MR. CRONIN: So I think, if you're going to add additional members, it's sort of -- and I heard this suggestion maybe two, an asset manager and a broker-dealer -- if I understood the math right, with -- was it

14 current votes? Adding to any issues that don't require unanimity, you know, sort of -- what do you really gain?

So I'm not sure that you could get enough voting blocks. So I guess the long-winded point is it should be by exchange operator, not the number of exchanges that they had within. And I think that would make the calculus much more palatable to actually making sure that any issues that truly weren't in the best interests of the industry and were more self-motivated by the exchanges, any of that activity could be halted or overturned.

I would also agree that it probably makes sense to look at it by exchange group. Otherwise, it feels like a game of Monopoly, where you just keep buying properties on the board and put a hotel on it eventually. So this is -- yeah, this is something that probably deserves a further look.

MR. HARKINS: Yeah. I mean I'll by -- like with the -- being in favor of the vote for advisors. However, we are not in favor of, you know, rules or proposals that would limit what we can do, given the obligations that we have. I mean not everybody is going to like it, but the exchanges have a higher obligation, so they have higher voting power. So that's our view.

MS. KASPAROV: I think the current construct works. I think it's important, if we do change it, you know, if the Commission determines to do that, we're happy to have that discussion.

But I think that it's important to remember when we do consider changing the allocation of votes, that we do protect minority rights, right? I've been a member participant at CHX, which had one vote. That vote was important to us. It made a big deal, you know. And it made a difference in the plans in some circumstances where unanimity was required. And we were able to make some good changes and good strides to come to agreement with our vote. So I think that's important.

I would like to correct. I believe it is 16 votes, actually, that the participants have of the plans.

MR. SHILLMAN: And Emily, you raise an interesting point, because we've heard on the unanimity -- we heard criticism of unanimity as being -- creating inefficiencies. But it does protect -- particularly when you look at the three exchange groups, if we started going more to majority, super-majority, you could essentially disenfranchise IEX or FINRA or some of the entities with just one vote.

MS. KASPAROV: Correct.

MR. SHILLMAN: So it's a balance on that.

MS. KASPAROV: And, you know, this is my opinion as a chair. I think it's important to protect those minority views, because they are important.

And as I said earlier, if you're doing a plan amendment, this is the plan that we all operate under. It is important that we agree to the extent that we make those changes ourselves.

MR. SHILLMAN: Okay. Rick, is there anything you want to add?

MR. DE JESUS: Wait, can I step in there?

MR. SHILLMAN: Yeah, sure.

MR. DE JESUS: In terms of minority views, if you just held votes by exchange group, you would actually increase the voting representation of minority exchanges. So if that's what we're looking to try to solve for, I think that might be a better solution.

MR. KETCHUM: I stick generally with the equity -- the recommendation of the advisory committee, I think, one vote per group makes general sense. There should be some reflection of market share size that I think is only fair.

I would say that a part of this, and a protection from the standpoint of different views is whatever decision is made on a vote from the standpoint of the industry side shouldn't eliminate the advisory

committee, both from an expertise standpoint and also the key arbiter here is a clear articulation of different views to the Commission, where before there wasn't as clear an articulation of the Commission. And I think advisory committee is an important part of that.

MR. MASONE: Let's start with something that I think is pretty universally agreed, I hope. If we could agree upon anything, I think there is -- I hear most, if not all, market participants say that the equity markets are overly fragmented, that if we started with a white board and we were to craft the ideal equity market structure, it wouldn't be this, where there is 40 different venues to execute a share of IBM.

So if you start there, then how can we kind of, through regulation, systemically disincentivize excessive fragmentation? Well, one of the ways is to potentially eliminate this notion of having another vote for every exchange medallion that you either light up or buy.

When I hear, you know, leadership at some exchange groups talk about, well, in response to X, Y, Z regulatory initiative we're just going to light up another two exchange medallions, that, to me, just reeks of -- it just doesn't seem optimal. That doesn't seem like the right way to think about the way to run businesses. And that's not a slight to any one

particular exchange.

I think, again, rational actors operating under a construct that rewards that, it rewards it in the form of another vote on these operating committees, it rewards in the form of another share of market data revenue. Let's -- one way to address that is by consolidating the votes among exchange families with a nod to, you know, a view that, if someone controls a significant portion of market share, then they probably ought to have more than just one vote.

MR. RAMSAY: Not surprisingly, I agree with that point of view. And I think Mike hit it on the head. I think the question is what kind of incentives you put into the structure for fragmentation versus not.

Now, I mean, we've been -- I think this is a last -- probably a factor that matters less in that regard than some of the other things that have been discussed during this roundtable, in terms of the incentives exchanges have to create multiple, you know, reasons to connect, multiple different data feeds that have to be subscribed to, all those kinds of things. Those certainly drive fragmentation.

But there is no sensible reason why having multiple -- you know, people should collect kind of dormant exchanges as chits to increase their voting

representation on the SIP committee. It just makes no sense. So, yeah, so I would favor that.

MR. SHILLMAN: Well, great. I think we've exhausted our time. I want to thank the panel. I think it's been a very interesting panel. I think we've made some progress moving towards the center on a few issues. So I want to thank all of you.

And then, just to remind people that we will congregate again at 1:15, this is an hour for lunch. And in the interim, if the panelists on the next panel could go to the green room now, we'd appreciate that.

So again, thank you for the --

(Applause.)

(A brief recess was taken.)

MR. GRAY: Good afternoon, everyone. Welcome back from lunch and to the stretch run of our roundtable on market data and market access. Just like horse races, the stretch run is always the most exciting. So I know the last two panels are going to deliver.

The topic for the sixth panel is funding of the core data infrastructure, and we're particularly going to focus on potential steps to assure that a modernized core data infrastructure is appropriately funded, and that the associated fees satisfy regulatory standards.

We're fortunate to have a great group of extremely knowledgeable panelists, and we want to get to their discussion of funding as quickly as possible. But first, as we did with our earlier panels today, if each of you would just take a minute and quickly introduce yourself, that would be great.

Greg, do you want to get us started?

MR. BABYAK: Certainly. I'm Greg Babyak. Thank you very much for having me here, and thank you for having the roundtable. I'm global head of regulatory affairs at Bloomberg, LP. I've been in that position since 2015. Prior to that I was head of government affairs at Bloomberg from 2001 to 2015. Before that I was in private practice with my own firm, Royer and Babyak, representing financial services clients for a 15-year period. Prior to that I was chief of staff to the vice chairman of the House Energy and Commerce Committee. I have, since 2006, had the privilege of co-chairing SIFMA's market data subcommittee. But I'm here today speaking on my own behalf, and not SIFMA.

MR. FACINI: Adrian Facini, head of product at IEX. I joined prior to the launch of the ATS through the launch of the exchange, and now eventually as a listing market. Prior to that I was at Bank of America, head of product and electronic trading. And then, prior to that, a developer at Citigroup.

MR. JONAS: I'm Brad Jonas, I'm the chief business development officer at Quantlab Financial. We are based out of Houston, Texas, and a global leader in automated proprietary trading, operating in multiple asset classes around the world in 50-plus markets. And we also have a fully-fledged broker-dealer in the U.S., here. Been there since 2010, and prior to that was a CTO for a brokerage firm on the NYSE.

MS. PIKE: Good afternoon. I'm Marcy Pike. I am a -- I'll put it out there -- I'm a 30-year veteran of the market data industry. I feel a little bit old about that, but there are people in the audience today that were there when I started on day one, so I know I'm not the only one. I've worked in market data vendor organizations, I've worked on the consumer side of market data, as well, managing pricing operations and institutional custody and accounting firms. I've managed data for an endowment operation, an institutional buy side firm. And for the last 10 years, I've managed market data for Fidelity Investments.

MR. SCHELL: Good afternoon. I'm Brian Schell. I'm 30 years old. No, I'm kidding.

(Laughter.)

MR. SCHELL: I'm CFO of Cboe Global Markets. And prior to that I was CFO of BATS Global Markets. And

prior to the exchange encompasses a tiny, tiny eight years -- given this room -- I was with H.R. Block, FDIC, KPMG, and JP Morgan.

MR. TABB: Larry Tabb, founder and research chairman of Tabb Group. We're a financial markets research and consulting firm. Started 2003. Before that, started Tower Group Securities and Investments Research. And before that, ran business analysis for Lehman Brothers and did back office. And before that, when they were carving trades in stone, I managed back-office operations for Citigroup in the fixed income space.

MR. YETTER: Good afternoon. I'm John Yetter. I'm deputy general counsel at NASDAQ. And before my time at NASDAQ, which stretches back more years than I care to remember, I was at the -- in the general counsel's office at the U.S. Treasury Department. Before that, in private practice. Thank you.

MR. GRAY: Okay, thank you, panelists. I'm going to kick us off by just quickly highlighting the few points on the regulatory requirements that govern the fees for data products and access services, and hopefully it will help set up the panel's discussion of funding.

SEC rules require that an exclusive processor of market data -- a term which covers both the SIPs and

the exchanges for the proprietary data -- must distribute data on terms that are fair, reasonable, and not unreasonably discriminatory. Given the different contexts of SIP data and exchange proprietary data, however, the Commission in the past has taken different approaches to reviewing the fees of SIPs and exchanges.

For SIP data, which can only be obtained from a single monopoly provider, the Commission has recognized that there is no room for competitive forces to affect the level of fees. In its Bloomberg order from July of this year, the Commission repeated its longstanding position that SIP data feeds, therefore, need to be tied to some type of cost-based standard in order to assess their fairness and reasonableness.

The Commission has not, however, ever adopted a specific approach to applying a cost-based standard to SIP fees. In the Bloomberg order the Commission also noted that it had previously expressed a preference for market participants to reach a consensus on SIP fees, if possibly, which obviously had not been reached in that case.

Turning to exchanged proprietary fees, although they are subject to the same regulatory standards to be fair, reasonable, and not unreasonably discriminatory, the Commission historically has taken a different approach to reviewing proprietary fees. In particular, it has allowed exchanges to use a market-based approach under which an exchange bears the burden of proving that it was subject to significant competitive forces in setting the fees. In its SIFMA decision from just last week, the Commission held that exchanges had not met this burden in supporting two proprietary data fees, and set those fees aside.

In a separate decision last week, the Commission remanded challenges to over 400 other rule changes to the exchanges and the SIPs for further proceedings, consistent with the Commission's decision in the SIFMA and Bloomberg cases.

So, given this somewhat unsettled state of affairs in the regulatory review of fees, it seemed like it may be a good place to start -- was to have each of our panelists take a few minutes to just give their most important points they would like to make today for how they think the Commission should go about this task of assessing whether fees are fair, reasonable, and not unreasonably discriminatory.

Greg, will you start us off again?

MR. BABYAK: Happy to. First of all, the -- as you have articulated, there is -- we're not operating off a blank slate here. We have a statute, a statute that is

intended to promote greater transparency and access to this data. And we have both the Commission and the courts having rendered interpretations on that statute.

Clearly, the -- as the order of last week -- well, clearly, it has been -- and as was re-articulated in the Bloomberg instance, you've always had core data conceded to be monopoly product. It's designed to be a monopoly product. And it needs to bear some relationship to cost.

I would say that, coming out of the net coalition holding and the order of last week, that you're in a not dissimilar situation with proprietary feeds. Then that coalition holding basically said you need to have either indices -- indicia of competition, or you default back to trying to look at cost data to ensure that monopoly rents aren't being extracted.

We've been through a lengthy court challenge over many years at which many trees were slain to produce a docket where exactly these issues were examined. And the court, as the Commission did last week, found that the exchanges had not carried their burden of proof of showing that there were substitutable products or some other alternative theory, a platform competition or order flow competition sufficient to allow the court and, subsequently, the Commission to conclude that there were

competitive forces governing the proprietary feeds.

So, I would say, based on what we have seen come out of now about 12 years of litigation, coupled with the consensus certainly of market participants that has arisen in the past day-and-a-half, you'd say this data is, for some market participants, essential and it's monopoly data. And hence, I would argue that the cost basis or -- and again, not a direct -- not a perfect relationship to cost, that's not the standard, but some relationship to cost, which obviously can only -- the first step in that process has to be an assessment of what the actual costs are of assembling, aggregating, and disseminating that data.

MR. GRAY: Thanks, Greg.

Adrian?

MR. FACINI: I'll echo many of the same sentiments that Greg just shared. As Brad said yesterday, there is no replacement for NYSE data and NYSE's data center. It is -- they have an advantage there. They have a latency advantage. They can provide that data faster than anyone else in that data center to the customers who are there, and no one else can truly compete for that. It truly is a monopoly. I think Ronan brought that up, as well, yesterday.

So that being said, it is a monopoly product.

The proprietary feeds that the exchanges disseminate is a monopoly product.

On the SIP side, there should be transparency around the cost to produce the market data that it provides. And through that transparency, I think we can make a better decision about what is truly fair and reasonable, and not unfairly discriminatory.

Since the prop feeds could be considered a monopoly as well, I think the same kind of construct should be put in place, where we would look at the cost to produce such market data, and use that information to make a determination about whether or not the fees were fair and not unreasonably discriminatory.

MR. GRAY: Thanks. Brad?

MR. JONAS: Thank you. So I'd also agree that transparency is paramount here, both for the SIP and the prop products.

You know, I've been chuckling the last two days, and heard it again this morning, with CNBC as I was getting ready to come over here, that, oh, these brokers make so much money, this is such an inconsequential portion of their revenues. But yet, as a publicly-traded company, I would imagine that NASDAQ or any other exchange -- if they felt like a vendor was over-charging them, they would damn well do something about it to protect their shareholders. We don't have that option.

So having that transparency is definitely key. I think there is also merit in leveling the playing field, so controlling the types of products that come out. You know, we've heard several times over the last two days that these issues don't really impact Mr. and Mrs. 401(k), but yet we have feeds that are faster, providing some of the same data as the SIP, but yet they're out of reach, due to cost reasons, to Mr. and Mrs. 401(k), but yet they're at a disadvantage. And we can argue whether they care about three to four microseconds or what not.

But leveling the playing field and just having one -- as Adam said earlier -- one feed, one speed, I think would be a good step forward, as well.

MR. GRAY: Thank you, Brad.

Marcy?

MS. PIKE: Similar to the other panelists, we also believe that transparency is key. And we actually believe that the exchanges are allocating costs for their products, based on the perceived value of the data, not the actual cost to produce the data. Again, because we don't have much transparency, we have, you know, no way to validate that.

But you know, we do believe the should be

taking into consideration the cost of their, you know, data center space, cost to support personnel to monitor, manage, and deliver the content. It should all go into the bottom line of creating what the cost of their products are.

We think trading fees should be aligned with trading execution costs and data fees should align with the production and dissemination of trading data.

We also believe that there is a ton of inefficiency in the exchanges today, particularly with respect to the administrative burdens that the entire industry needs to go through in order to adhere to the policies and procedures of the exchanges around the use of the data, and that likely is a huge opportunity area that the industry could be considering. If we were able to relieve the administrative burden, that could be an opportunity to drive down the overall cost of being able to produce these products and disseminate them to the marketplace.

MR. GRAY: Brian?

MR. SCHELL: So I may have a slightly different point of view. You know, I think we all agree that the information distributed to the SIP and otherwise is both, you know, costly to produce and highly useful and invaluable to our U.S. equity markets.

You know, exchanges, at our most basic level, is we're matching the buyers and sellers and we're providing price discovery by the aggregate and dissemination of the quote and the trade data. Again, contributing to a healthy and high-quality market.

You know, the matching of the transaction process and the dissemination of that data are so related -- joint products, some may call it. They're inextricably linked. And, you know, as a highly regulated exchange, you know, the financial and regulatory burden of both the transaction process itself and the collecting and producing of the market data is borne by the individual markets, not just the SIP. I personally would not know how to accurately or fairly disaggregate those costs related only to market data versus those only related to the transaction processing side.

An inventory of some of those costs to consider -- and Marcy actually identified those -- all of the technology-related costs for the matching engine, the software development, the improvements, the hardware costs, the continued work on the efficiency, and the innovations. The data center costs, both primary and secondary. The occupant, the personnel, the regulatory surveillance, rule enforcement, compliance requirements,

examinations and filings. And the required redundancy. And let's not forget customer support. All, again, to support and promote the integrity of the exchange and, therefore, the U.S. equity markets.

On a related note, transparency has been a key theme not -- obviously, introduced already today -- but also throughout all of the panels.

And actually, all of the exchange-related costs are actually filed annually through audited financial statements to the SEC. So those are exchange-specific, and they're filed every year.

At Cboe, our historical financial reporting also reflects the joint nature of my previous point. In our 10K and our 10Q filings with the SEC we require, among other things, provide financial information as to how our decision-makers manage the business through segment reporting. We report on asset classes, U.S. equities, U.S. options, European equities, futures, and global effects. We don't report by products. And therefore, we have not tried to segregate the cost by product, because that's not the way we manage the business. We do report, obviously, transactional revenue, and we obviously also report market data revenue, among other items.

And if we looked at the other regulated

industries, I suggest -- as an alternative -- is that we know that there is some evidence that say public utility commissions have all but abandoned attempts to try and allocate some of these costs of related products.

With respect to a prescriptive approach, which we can talk about more fully in the panel versus making all the points now, we think that's going to have its challenges. And we know that SIFMA, for example, in one of its comment letters -- and one my colleagues raised earlier in one of its comments letters back in 2016 is that there is definitely some issues with some of the disclosures and the changes that would be required in that process.

With respect to the proprietary data -- and this is where I know has drawn a lot of attention and a lot of discussion, also -- I would challenge the notion -- this, I guess, all depends on how you define monopoly. I would say that's essentially didn't exist -- which is obviously -- predecessor, as we were acquired by Cboe -- didn't exist 15 years ago. Someone would have thought that we had two monopolies going on.

So I will challenge you that market forces do continue to exist in today's world. It was a different approach, different business model to generate the market share.

So I would challenge the notion of monopolies. And I think you've heard that on various interviews that have happened from various exchange leaders, that we fight for market share every day, and there are competitive choices.

A lot of the proprietary products that we see exist have been driven by commercial choices firms make, and we've provided those choices to continue to innovate. And yes, there is a financial incentive. We are a public company and we do have a shareholder base, as well. But I will argue that disenfranchising our customers is not in the best interest of our long-term interest of our shareholders.

And I will say we also have data that suggests, as we're examining now, is that as our market share declines in our U.S. equities markets, we've seen a fall-off of sales of our market data. Any time we've raised access fees on various items that we have, we've seen declines in usage. So I will tell you that if one of your definitions of monopoly means that you do not see a fall-off, or you see perfect price elasticity, it doesn't exist. We see price elasticity on our products and/or call it a market share decline.

With that, I'll turn it over.

MR. TABB: Thanks, Dan. Thanks, you know,

Director Redfearn.

I'm kind of in the fortunate or unfortunate seat of not actually buying market data or not producing market data. So it's hard for me to kind of opine where the baby should be split. And I think, you know, I would actually say to you that seems to be what this panel is about, trying to figure out how to split the market data baby, and how to allocate things.

So what I did do is I went through the 10Ks and Qs and tried to, you know, line up market data spending and different line item spending that the exchanges produce and I submitted that to the panel.

Looking at it overall, it seems like the growth of market data can be broken out in two spots. One from the SIP, the SIP revenues seem to be pretty consistent, around 480 million, plus or minus, since 2010. Those prices have not gone up much. You can argue about the utility of the SIP or not. That's a different story. But it doesn't seem like the pricing issue is around SIP data, it seems like the pricing issues are more around proprietary data, connectivity, access, and things like that.

That seemed to be going up about 8 percent a year since 2010. And really, I think the big battle around this is that I'm not sure that the investment

managers, you know -- if you look at brokerage commissions, you look at investment manager fees, you look at proprietary trading firms, you know, profits -- I'm sure they would, you know -- they would love to have seen eight percent growth over the last eight years. And I think that's really this battle.

So I think the battle is really about machines that trade and machines that match, and how to allocate that revenue. So, you know, if you -- my takeaway from this is that I think this is more about, as I said, machines. The issue, I think, is really that there's a fight between, you know, who keeps that profitability. Is it exchanges or brokers or investment managers or the community?

From a technology standpoint, it seems like, you know, if you look at most other technologies over time, performance increases, costs decrease. That's not happened in this space. I can't say that from, you know, from an economist. But I think that needs to be looked at.

People have talked about getting rid of OPR, you know, the order protection rule, to say, okay, well, you know, if we don't have order protection, we may not necessarily decide to trade on Cboe any more, we can go trade elsewhere. I'm not sure that's really the case for agency traders or agency brokers or folks that have fiduciary obligation for best execution. I think whether you keep OPR or get rid of OPR, I don't think that changes.

So what do you guys do? I think -- you know, I think, like Brian -- you know, you got to better measure this stuff. You know, you got to measure -- better measure and get better understanding, whether you decide to make that data public or not. Certainly, if we're going to make a decision on how you're allocating market data fees and costs, you need a better set of data than you can get over the 10Ks and 10Qs, because it's really difficult to look at how that gets parsed out.

Licensing practices I tried to mention before. You know, some of the licensing practices at the exchanges are forcing folks to buy the same data two, three, four, five times. You know, if you have -- some firms are charging -- if I have a -- you know, a market maker, they buy the data. An agency side, they buy the data. And ATS has to buy the same data. If I want to store it and use it for analytics, I got to buy the data again. And then you're -- you know, and I think, to a large extent, maybe that's where a lot of this comes. So look over the licensing models. I think that would be a very beneficial thing.

The other issue is you've got to be really careful, you know. Our markets are, again, the world. We do a really good job in terms of price discovery. You know, we really -- you know, I wrote a piece a couple of years ago called the "Market Data Death Match," and I kind of ended saying, look, you know, this has to be resolved equitably because you don't want to mess up price discovery because that's not -- just -- it doesn't just impact the people in this table and the people in this room, it impacts virtually every public company and every investor, you know, not just in the U.S., but probably around the world. So you don't want to screw it up.

That said, I don't envy you guys. You got to figure out how to cut up the baby, and I don't want to wield that sword at all.

MR. REDFEARN: Larry, just one point of clarification. I don't think the intent here is to split up a baby or to figure out who gets what. I think what we've stated many times over the course of this event is that we have a statutory obligation to review these fees and make sure that they're fair, reasonable, and not unreasonably discriminatory. And so we're trying to figure out how to do that, not to allocate between different parties.

I'm trying -- so that's one of the reasons why we're here, because we have had, you know, a fair number of participants come to us and make these various noises and claims.

So that's what we're trying to figure out, not to --

MR. TABB: No, no, I --

MR. REDFEARN: -- divvy up the baby.

MR. TABB: I don't disagree with that. But it's a difficult job. And I nod to your difficulty in trying to figure that out.

MR. GRAY: Thanks, Larry.

John?

MR. YETTER: Thank you, and thank you for the invitation to appear today.

In the decision last week, you know, the Commission pointedly did not find that the markets were not competitive, and they pointedly did not find that the fees were not fair and reasonable. So, in some respects, they didn't find very much, which I think is consistent with a long trend of not really defining these terms.

And, you know, in part because it's a slippery slope towards the Commission trying to set itself up as a rate-making agency, which we don't think it has the statutory authority to do, and would be unwise, in any

event, for all the reasons that I think have been recognized over the years with different agencies like the Interstate Commerce Commission and the FERC and the Civil Aeronautics Board trying to engage in this, you know, exercise of determining what costs are in the rate base and what costs are not in the rate base, and what the permissible rate of return, and having litigation over each and every filed tariff that comes before the agency. And, you know, that -- if there has been litigation to date, that's not necessarily the cure to it.

I think the Commission has, over the years, done a good job with the SIP about -- and in -- you know, you've more recently done an even better job about trying to guide improvements, trying to keep cost consistency. You know, the data that's been disclosed by the SIPs shows that the fees paid by non-professionals, paid by the Main Street investors, have been falling in both absolute and real terms over a long period. And the fees paid by professionals, including the much-disputed non-display fees, have also been consistent and, therefore, falling in real terms over a long period.

So to some extent, like the other panel, you know, we kind of wonder what is the problem. Specifically, this is SIP fees, you know. They're not skyrocketing, they're steady and, therefore, falling.

But, you know, people talk about disclosing the costs of the SIP, and you know, there has been resistence. And I think the resistence is because of a fear that it is a slippery slope and that people will then say, "Aha, therefore that is the rate base," and these SIPs don't serve any other purposes. But I think over the years they've been recognized to serve many purposes through their revenue structure, you know, going back many years. And, obviously, the Commission has recognized that they help defray the regulatory costs of exchanges, as well as all the other many, many, many costs that Brian listed in his presentation just now.

And, you know, the exchanges do regulate. We often hear that it's all been outsourced to FINRA, and the exchanges don't do anything, and FINRA does it all, and that is simply not true, you know. We've got an extensive regulatory staff for real-time regulation, and regulation of our listed companies, and we're actually in the process of taking more and more back, because we feel we can do it better than FINRA. And so we're bulking out our regulatory staff.

You know, in addition, the SIP fees have also been recognized at the Commission to serve the function of promoting quotes. That's the whole point of the

revenue allocation formula. If you just cut the revenues back to the bottom of the rate base, whatever that may be, then it would no longer serve that purpose. You're not encouraging -- and you know, one of our proposals in all of this has been to try to enhance that, not by, you know, increasing the quoting share, but by increasing the link between quotes that lead to actual executions and the revenue associated with them. So not just putting up a quote and having it fade, but having it be real, getting more of an allocation.

And then finally, I think it should be recognized that these revenues serve a pro-competitive purpose. But, you know, there is always this tension between how much exchange competition is enough, you know. Do we have too much fragmentation? Do we not have enough competition? And just -- the pendulum always seems to swing back and forth. But because of the SIP, an exchange like BATS, like IEX, can set up shop, and very quickly it's getting revenue. And that is a pro-competitive purpose of the SIP, we would submit.

You know, with regard to prop data, I do have some remarks I want to deliver about economic theory in that regard, and two-sided markets, and platform theory. And I'm going to reserve that, because I think I'm going to get more time to do that later.

So I would just suffice it to say for now that, you know, some of the commissioners did have questions about that, and what they said in connection with that decision, and we think that is certainly worth the Commission's consideration, going forward.

MR. GRAY: Thank you, John. And thank you, all the panelists. I mean there was some -- I think some really, really interesting points among all of you. So I think we have a lot of room for discussion as we start to drill down on the different areas that you all raised.

I think the first thing that we would like to drill down on is on the SIP side of the equation, where we have at least some established basic view from the Commission that there should be a reasonable relation to cost. And I think, Greg, you said some, not perfect, and then we have some reference to splitting the baby. So I think one of the issues we'd sort of like to explore a little bit is where there is room for agreement or ways to think about how you can achieve that objective, which the Commission has stated on many occasions, and particularly in the context of a monopoly product, you know, how you decide what's too low or too high.

And in that regard, I thought it might be helpful, since it's been mentioned a few times in previous panels, this mysterious $400 million figure, to

just say I think what everyone has been referring to is the fact that -- which you can see now, based on the fact that the SIPs are disclosing their annual revenue that's actually distributed to market participants, you can see what the SIP -- those revenues are, and they were 392 million in 2010, across all 3 networks, tape A, B, and C. They dropped to 342 million in 2014, but they've come back up to 387 million in 2017. So, essentially, as Larry said, they've been pretty flat over recent years.

And I think people round it to 400 million and say it's the 400 million. So that's what the -- that's sort of the size of the SIP pie. That is the pie that's actually distributed to market participants, or to the SROs -- participants in the plan.

What isn't disclosed right now in the SIP disclosures is the expenses of the SIP, which would include the processor expenses and the administrative expenses. But the Commission has disclosed that periodically in its releases over the years. The last time was a number of years ago, but was -- it was in a 2010 concept release on market structure. And it found at that point the expenses at the SIP level were less than five percent of the revenue that was distributed to the SRO participants.

So I think what we wanted to start off with was maybe dig a little further into an issue that a number of you raised about how we should think about both the costs that are relevant in determining whether the 400 million, give or take, is too high or too low, and, you know, are there ways to think about allocating them that doesn't require splitting the baby or the full-fledged rate-making approach.

So maybe start off with Brian on that issue. Sort of beyond these direct SIP expenses that are deducted, how should we think about what costs are relevant and what -- how we might approach that allocation issue?

MR. SCHELL: So in my kind of introductory remarks I think it's a great question, and it is a challenge. I would echo the challenge of what the statutory obligation that -- you know, that -- when we first started talking about it, what you were trying to accomplish. And it is a challenge because you actually have a group of exchanges who -- and it could be not just exchange operators, but by exchange, particularly, that may have a very different business model as to how they're trying to grow.

So -- and I could look over the life cycle of BATS, or I can look at maybe where IEX is right now -- is that you may choose a very different approach for a

commercial reason with a higher-level goal of making markets better or providing an alternative of what's existing with, let's say, with more established exchanges. If we review the history of the BATS model, it was we're going to try to grow share, become critical against two very large, dominant players through great technology and very low cost to try and incent. And we had a consortium that was, you know, helping support that, but they still had a best ex requirement, so that's not a -- they were just throwing us flow because they were owners. I mean they -- it was legitimate.

So -- but we did, through pricing, through attracting that liquidity. And at one point we went inverted on transaction pricing. And we didn't charge for market data. And that was -- again, was a commercial decision we made with a long-term perspective of how are we going to make this market better, and how are we going to -- at least in our view -- and how do we make a return for our investors who had faith and confidence in -- to do that with us.

So the -- what I'm kind of winding up to is that we chose, from a revenue standpoint -- and, like I said, enterprises can choose this -- I'm going to choose either a really high transaction fee and be way priced higher than anybody else on a per-transaction basis, or

I'm going to do -- and not charge any market data or any other access fees or any other fixed fees, or I can do just the opposite to try and cover those costs in that model.

And as I said, as I -- as reflected in our statements that, as a CFO, I have to personally sign off on, the way we manage the business, we don't manage the business from a cost allocation business of -- approach.

Now, again, I know that your requirement is more cost-related versus cost-plus, which I think is the worst of all, because I think that's a disincentive to be efficient, because if it's just cost-plus, there is no incentive to be efficient in that process, and I don't think anybody wants to end up in that model, honestly.

But how you extract the enhancements we're making around the matching engine to improve our market share, to improve the client experience, to improve market quality, and then the resulting output of data because of what we're able to do on that side, is that a -- we've not made a determination that was 50/50. We may be pricing that data lower, say at only -- maybe capturing 10 percent of that, versus 90 percent of it. Or maybe it's 90 percent of the transaction side and 10 percent of the market.

So it's -- at any one point in time the challenge that the Commission would have on that is -- or anybody would have on that is that then do you make it unique to the business model that any exchange may be implementing at any one point in time? And I don't know how you do that. And all of those systems is, well, I had a Reg SEI just on that exchange. Oh, they were also worried about my dissemination to the SIP. And those costs were maybe different, and how that network was built out.

So they are so tied, and one is the result of the other and built up over time that I, frankly, don't have a recommendation, unless it's an arbitrary percentage. Because the costs are there. We know what the costs are, and we can tell you what they are within each exchange. But again, I -- because I don't think the business is designed to do it by product, that's the challenge.

MR. GRAY: Thanks, Brian.

John, you want to pitch in with another exchange perspective before we get to the rest of the panel on that question?

MR. YETTER: Sure. And to be clear, we're focusing still on the SIP, right?

MR. GRAY: Yes, yes, the SIP.

MR. YETTER: All right. I mean -- yeah. I mean I think I'd just reiterate what I said earlier about I think the Commission has actually done a good job here, and I don't think there's a huge problem to solve. I think, you know, the costs have been stable.

If the SIP committees came to you with a proposal for a massive price hike, I think you'd react to that in a certain way, you know?

You certainly, you know -- there are filings that have been, you know, looked at one way or another recently, and I think around the level of justification that's been provided, but I think those were -- you know, one of them, frankly, we're still waiting for comments on. It's back with you for a draft as to whether we've, you know, adequately provided the justification.

But, by and large, these filings are about moving things around the margin, they're not about large-scale changes. And given the stability of revenues over the time, unless there is an agenda to, you know, slash costs to the bone and change the purpose that has been traditionally served by SIP revenues, unless that is the goal, I'm not sure there is a great need for change in the way things have been addressed to date.

MR. FACINI: I'd just be curious. What has been the use of the SIP revenues at NASDAQ or BATS?

MR. YETTER: Well, what I was referring to was what I said in my opening remarks, that I think, traditionally, they serve several purposes. One is to defray costs of operation that actually generate the data at the exchange that regulate the markets to make sure that that data is, you know, of high quality.

Another is to encourage new entrants and competition in the exchange space, because people can actually -- you know, if it was just cost-plus, the path to profitability for a new entrant such as IEX would be much, much, more difficult.

And, you know, the third is encourage quotes and price discovery in the market. And that would also go away if you slash things down to, you know, the bare costs of what the processor and the administrator are --

MS. PIKE: Yeah, I guess --

MR. GRAY: Marcy?

MS. PIKE: -- I guess why we should be complacent at just keeping costs stable. It just -- it doesn't feel right. Everything -- with the expanded use of technology, costs are driving down in so many different sectors. So that just -- it doesn't sit well with me to say that we're happy to keep things the way they are, we're happy to keep things stable.

And so I'm just curious to -- if any of you

guys have comments on that, and why keeping things stable is the way to go.

MR. GRAY: Larry, your light's on.

MR. TABB: Yeah, I was just going to say, you know, yes, that the SIP revenue has been stable. But the fit for purposeness of trading against that data has declined over the last decade. You heard yesterday that virtually nobody -- you know, none of the institutions leverage the SIP to trade unless they actually -- a broker came in to say, "Hey, I'm just trading off of SIP data." They'd be shut down.

So if you talk with Greg about, you know, the value of different types of data, I'm sure he would tell you that people pay more for the data that they actually use to trade off of, not the ones that they just -- you know, they're just getting indicative quotes from. I don't know.

MR. GRAY: Greg?

MR. BABYAK: There's a lot here. First of all, I'd say I feel Brian's pain in that you're obligated to maximize shareholder value. And you have, within your entity, monopoly functions and very competitive functions.

So when you say, well, we have to determine -- we could either raise the cost of execution, but we're

competing there, so instead it's easier to raise the monopoly costs, perfectly rational approach but it's bad policy. And it certainly is inconsistent with the goal of the '75 Act, which was to increase transparency, create a public good, allow people to have it, not creating a monopoly revenue stream that could subsidize other exchange activities.

And I would say amen to Marcy's point, where when you say that, gee, if prices stayed the same they're really going down, in a world in which the price -- the cost here is computer processing, which is plummeting, I don't think anybody sitting here, if they had an iPhone from 10 years ago that had -- was at the same cost as it was 10 years ago would say this is great. They'd say, "Boy, we're not taking advantage of the savings and innovation that can flow from technology."

MR. GRAY: Brian?

MR. SCHELL: So I think that -- I think we may be underestimating the cost of technology and everything that goes around that. Has anyone looked at the data center costs and what they've done over the same timeframe?

If you look at the actual enhancements that they actually -- SIP has actually done, that does take money, as well, to do. And that also involves some of the infrastructure of the exchanges, providing that data, also. So there are more than just raw computer chip prices that may be falling.

But like many of those organizations, they're -- also have new innovations, which are not the same price as what they were the year before. So the fact that technology costs are falling -- I think the productivity is increasing, but I'm not sure that I would argue, looking at our own numbers -- and I would argue that we are one of the more efficient organizations -- that it actually is falling.

And so I think we have seen improvements, and I'm not sure I would agree that it's -- that -- I agree that it is a worthy goal to continue to try and improve, absolutely. We do that within our own business, and it shouldn't just be for that one core product up here that we would ignore.

So I think poor market data and too high prices are bad for everyone. I would absolutely agree, whatever side of the fence you're sitting on, because that's for -- the long-term goal is to have very, very healthy and robust U.S. equity markets. We all win.

MR. GRAY: So I thought I'd maybe follow up on sort of your perspective from inside an exchange. It sounds like you have a -- from your view, a pretty big

ball of fixed cost, and you have a number of ways to try and recoup the cost, or to maximize your margin. How do you think about those issues in terms of transaction fees versus, you know, SIP data revenues or prop data revenues, in terms of, you know, where to raise, where to lower, all those sorts of issues?

MR. SCHELL: Honestly, it's a -- it's both a long-term perspective, as well as -- I'll call it -- and you go to -- all have a quarterly cycle as well as an annual cycle, right?

Everybody -- most organizations go through an annual budgeting cycle of what do we want to accomplish. And obviously, in the context, hopefully, of a strategic plan, of longer term -- here is what we want to achieve and here is what our -- some of our high-level targets of what we want to get to. And how do we envision ourselves getting there?

And, gosh, if I didn't have competition, it would be a whole lot easier to get there. But unfortunately, someone will do something that we weren't expecting here or there, and that's the wonderful thing about an incredibly competitive market, is hopefully the users of those markets are benefitting from that.

But I'll be honest. It varies. So if we're focused on just the U.S. equities markets, it has changed

and evolved. And if we look at the legacy BATS model of where we were and where that pricing was, and what that looks like, and where we're going to invest in the technology, it was all about growing relevance and growing critical mass. And pricing was made a little bit less relevant, as far as what we were doing, as far as looking at that approach.

And the same thing with -- and we're at that phase, I'll call it, with market data of we think we have a much more opportunity to grow subscribers versus looking to try and -- you know, try and extract price from an existing base.

Now, honestly, the price extraction has -- is a bigger lever, just economically. But we think, longer term, we want to see the number of growth than anything else. So it is a -- it changes annually, based on where we find ourselves, we find our market position, and where we see ourselves.

MR. GRAY: Okay, maybe we'll switch the perspective a little bit. And I know a number of the panelists were highlighting the importance of transparency in their opening remarks.

And for the non-exchange panelists, you know, what would you like to see, in terms of transparency of exchange costs or their operations that you think would

be helpful, at least to you, and might be helpful to the Commission in making this judgement of whether the SIP fees are reasonably related to cost? Anybody want to --

MR. JONAS: Well, I think we spoke earlier about the possibility of, you know, bringing in commercial providers to compete. Let's put it out to bid, and just see what the market comes back with to -- I mean I think, you know, the technology that NASDAQ put in place for the SIP has done wonders for it. But maybe there is some hardware vendor out there that can do it better, cheaper, faster. And we won't know that until we put it out to bid.

MR. YETTER: Well, to be clear, we got the contract recently because it was put out for bid, and there were private bidders for that. You know, non-exchange bidders for that business. And we were awarded the contract, and you've seen the results, in terms of the performance enhancements.

MR. GRAY: And I think we've -- as I mentioned earlier, the actual processing or administrative costs, at least historically, have been five percent or less of the total revenue pie. And I think, in terms of whether that 400 million is reasonable or not reasonable is sort of the -- it moves from expenses at the SIP level to the expenses or the cost of -- from the exchanges, when they provide their data to the SIP.

I was thinking in terms of just from a transparency perspective, not an allocation perspective, but, you know, what information do you think it would be helpful -- or do you think there is any information that would be helpful to be made public or to the Commission that would help, you know, shed some light on whether the SIP revenues, the 400 million, is reasonably related to the cost of the exchanges in generating that data that they're sending to the SIP.

MR. BABYAK: Well, you need cost data on the assembling and dissemination of market data, full stop. Not the rest of the enterprise. And indeed, that's what, in the coalition holding, the court seems to be asking for.

I'd add that I would suspect, again -- and I'm now -- nobody has deputized me to speak for the world, so I'm giving you just my two cents, which would be I don't -- I think that what people are looking for is not as one would experience in a traditional rate-making, where you're working out to a decimal point. It's understood that that's not where this is headed, and it's understood that your standard, which is some relationship to cost, doesn't get you there in any event.

What you would -- the -- what we're trying to

do is get to a world in which you're not getting 100 percent increase in the fee, or a 50 percent increase in the fee. I don't think anybody is fighting over the margins, and I think that leaves you in a situation where, rolling back to your earlier raising of the rate-making issue, that these sorts of things would not require rate-making. It could be done in the context of an Administrative Procedure Act review in which, once you organize the template, which is what I would hope is sort of the goal flowing from last week's order, you could -- it would be able to be judged based on the justifications provided by the exchanges, you know, once you have that baseline of costs.

So I think that, you know, I don't imagine how this could end up as a rate-making process.

MR. REDFEARN: Just a quick question. And, Brian, I appreciate the competitive dynamics among markets today. We see it and you see it in market share.

And I guess the question I'm wondering about is in transactions, right, you see -- been relatively flat, right? Transaction revenue growth has been relatively flat. The margins, however, for market data and connectivity have been growing pretty consistently over the last several years, and you see it in a lot of the

earnings calls. And even the growth rates continue to be forecasted in that area as going up.

So if the competition is fierce, and the revenue for transactions is flat, why do you -- how do you explain the continued increased growth in the margins for market data and connectivity?

MR. SCHELL: And margins, you mean just revenues? Because we don't really disclose margins on a particular product.

MR. REDFEARN: It would be growth, the growth that we've seen --

MR. SCHELL: In the revenue line item.

MR. REDFEARN: Yeah.

MR. SCHELL: So one, we would attribute to actually subscriber growth as -- and whether that's a -- the outcome of kind of being the last mover, or most recent mover for market data, you know, coming behind, you know, obviously, the group -- behind NASDAQ, and starting to have our own offering, we're having a benefit of a low base, just pure math, simply, there. So we're definitely generating subscriber growth there.

And honestly, we are leveraging our international operations, as well. So we're actually going to new markets as part of that growth. So our biggest subscriber growth has actually been Asia and

Europe for the U.S. market data. So that's part of the growth that you see in that top line growing.

And if you're looking at just equity segment -- because if you look at just our 10Q or 10K, depending on which line item you pulled, obviously there are other asset classes outside the U.S. equities markets that contribute to that, like RFX, which was -- which is a relatively new business that's continuing to grow, as well as our European equities business.

MR. SHILLMAN: So revenues per existing subscriber for market data and access has been relatively flat?

MR. SCHELL: No, there have been -- definitely been some increases there, as well. But as far as ascribing some of the growth, it hasn't been pure I'm going to triple our fees. It's not been that way. It's been -- a lot of the growth has been from new subscriber growth.

MR. REDFEARN: So one thing that I think would be helpful is, you know, we're sifting through already common letters that are starting to come in and information that's being posted on the website. Some of what we're seeing are showing what looks like fairly significant increases in different product lines, right? So you hear one -- you know, one was a 50 percent increase in January of this year, another one was a 100 percent increase here. Another one talks about thousands of percent of increase, or whatever, over periods of time. We're trying to sort through all that.

And so I think one area of transparency that will be very helpful for us -- and this is obviously not just for Cboe, but for all markets -- is helping us to sift through this. When we look at the filings, filings are kind of hard sometimes to kind of -- you look at it and you try to figure out exactly what it's going to mean to the bottom line because of the way that they come in different shapes and sizes.

So it will be helpful, I think, for us, for different folks, to look at some of those things, help us look at some of what appear to be significant increases, and help us to determine how -- you know, how that's happening in the sort of competitive context we're in.

MR. YETTER: Yeah, I wanted to echo some of what you just said, and also respond to that a little bit. I'm not going to sit here and read off statistics, but I think what is relevant to look at is not just one price change in isolation, but rather stability over a period of time and, when that price changes, has come after many, many years of stability

And, you know, what has happened in the

interim, in terms of investments that have been made in the product, investments that have been made in the market infrastructure, and then, if you look at the compounded annual growth rate over that period of time, you're going to see a very different number than if you just look at, oh, one year, and it went up, you know, 40 percent, or something. Because if you look at it over the time since the last price increase, it might be an annual growth rate of something more like one or two percent.

The other thing I wanted to note was -- and this is following up on something that was discussed yesterday a little bit -- you know, some of the products that compete with the SIP, there is a lot of growth there in terms of selling those in Asia, which is obviously not necessarily directly competitive to the SIP. It's new customers.

There are also use cases for those products that wouldn't actually be permissible under the SIP, like streaming them live on a website. The SIP doesn't allow that.

And then, you know, finally, people upgrading from delayed use. So it's not a one-for-one substitution that, you know, everything that goes from NASDAQ Basic is a diminution of SIP revenue.

MR. GRAY: So there were a couple of points made in the opening statements with respect to SIPs that I wanted to get back to. One of them that you made, Marcy, which related to, I think, some of the compliance costs or administrative costs that can go into SIP data - - one of the -- sort of the way that the rule is phrased is that data is supposed to be made available on terms and conditions that are fair and reasonable.

And I think what you might be raising is are there some terms and conditions that go along with a fee, that it's not so much the fee itself is the issue, but the terms and conditions can impose a lot of costs on the back end. So if you wanted to sort of expand on what you were talking about, I think that would be really helpful.

MS. PIKE: Yeah. For folks that aren't familiar with the way it works, there is a whole cottage industry that's been set up around being able to navigate and interpret exchange policies and regulations for how you use the data.

Most large brokerage firms or asset managers that are consuming this data have significant staffs that are counting and reporting the usage of this data. Even the way we report it back to the exchanges is under antiquated processes. You know, we can either go direct to an exchange, or we can use a consolidator to report

that stuff back, and then we get stuck in the trap of, you know, did the data make it to them okay, and was it accurate, and do they believe it was accurate. There is a whole group of folks that have entered into the industry to help facilitate audits for the exchanges, third parties that they will, in some cases, hire to help them with the auditing process.

I think it would be very fascinating to just try to do a little bit of analysis on what the overall administration is costing the industry, because my guess is it's pretty substantial. It's something that, you know, as industry groups like FISD -- as we met in conference, we -- as consumer firms, we're really employing the industry to rethink how we do this, because it's incredibly wasteful.

And if the end game here is to get data out to Mr. and Mrs. 401(k), to the individual investor, I really think we should be rethinking, the whole administration, on what it takes for firms to be able to deliver that data. Fidelity delivers data to our retail customers. We give it to customers and we pay for that data, whether they're professional, their deemed professional users -- somebody touched upon that in an early panel.

The rules under which you are able to classify somebody as a non-professional versus a professional are changing and can be quite opaque and are not, you know, transparent to an end customer when they're trying to declare themselves. And Fidelity feels so strongly that it's important for our retail customers to have access to that data, that whether they declare themselves as a professional and it's costing us, you know, $50 a month, or they declare themselves as a non-professional and it's costing $1 a month, we still pay for that data, because we think it's so important for the retail investor to have in their hands.

But that cost of administrating that for us is a significant burden. It's a significant burden on the industry. And it's definitely something we should look at changing.

MR. JONAS: So I definitely agree with that. I mean I can't even imagine. I mean, thankfully, we don't really have that many eyeballs, so I don't have to worry about that. It's more, you know, non-display use. But I have someone working on it full-time. I know that some of my peers I've spoken to have multiple people just sitting there all day long, making sure the reporting is right, but, more importantly, making sure that they understand the rules. Because we need, like, a common dictionary across SIP products, prop, different -- you know, the different exchange families, and just a common

set of, like, what does non-display mean, what does delayed mean, derived.

All the policies are different, and it's just an absolute administrative nightmare. And we were -- Marcy and I were talking earlier that TMX in Canada has made a great step with its zero admin policy, where they're basically just trying to lighten the administrative load, which, I guess, you said --

MS. PIKE: Yeah.

MR. JONAS: -- you kind of brought that on. And we definitely encourage something like that.

MR. GRAY: Do you have any thoughts on what the right procedural vehicle would be to have that discussion and to maybe lead to changes in the policies and procedures? Or does this relate back to the topic of the last panel, which was governance of the SIPs?

MS. PIKE: It probably does go back around the governance, right, because these are the -- these are the commercial policies, right, of the exchanges, right? So we sign contracts that tell us that we agree that we will adhere to these policies.

And, by the way, the policies can change at any moment in time, and we're responsible for checking the websites of the exchanges to stay up to date on what policies may have changed. So I think it does go back to

governance. And it's another place where I think if there were more representation by the consumers that are using and managing to these policies, we might have, you know, a bit of a chance to change the dynamic here, and change the landscape.

MR. FACINI: Just one thing I'll add there. The CTA and the UTP, both of their policies differ from each other. So even in understanding within the SIPs, you have to read both of them fairly carefully to understand the definitions, the policies that apply, et cetera, so that you're not violating them.

One of the other things I was just thinking about as people were talking here, think more of the SIP as a utility. And in that way, like, the fee should be reasonably linked to what the costs are to produce the data. And it sounds like we're wrapping in not only the fees, or not only the costs to produce market data from a SIP perspective, but also back even to the exchange side, as well, as Brian was saying.

So I think it's -- it can be split up. I do think that an exchange and a SIP operator can actually delineate what the costs are to operate whatever entity it is, whether it's an exchange or the SIP itself. You could look at what it costs to actually offer physical connectivity within your system or within the SIP itself,

or logical connectivity, you know, like how many different servers you need to offer that, the people that are associated with that, the servers, switches. Like, there's a whole host of different things that went to those costs. But I do believe you can allocate the cost to each one of those different areas.

We've looked at it internally, ourselves, at IEX. Like, we've looked at physical connectivity, logical connectivity, what it takes to actually effect a matching in our system, what it takes to produce market data and disseminate market data, and what it takes to actually route to other exchanges. All these fees and all the -- sorry, all these costs, they can be aggregated within one of -- within each one of those silos, and we can get a number at the end of that. And you can actually figure out how to allocate that appropriately.

I do think it's an achievable task, and I do think that it is a commercial decision by the exchanges on how they want to recoup those costs. We personally -- we do not recruit the physical connectivity, logical connectivity on market data, but we get that back through what we charge on transaction fees. And the other exchanges have chosen to make the transaction fees more competitive to attract order flow, so that the other fees can be increased over time, as people basically become captive to their market.

So I do think that this can -- there can be transparency around this. It can be data that's given to the market about how these different fees are -- or how these different costs are actually calculated within the exchanges themselves.

MR. GRAY: To follow up on that point, has IEX -- does it have -- could you maybe shed maybe a little more detail on what that -- how you at least think about doing that allocation in what would be considered a reasonable way?

I mean the way I understand you actually recover your cost, you've made a choice to get them through transaction fees. But you've also said you have -- you've thought about this issue of how you would reasonably allocate costs from the different services. So you want to --

MR. FACINI: Definitely.

MR. GRAY: -- that a little bit?

MR. FACINI: Yeah, sure. So from a physical connectivity perspective, we looked at the switches, the infrastructure that basically resides within -- that everyone connects to. They use that for sending in order flow or for receiving market data from us. So we said those network switches, the patch panels, all of that,

the net -- the data center space, the operators of that -- so the personnel who are associated with actually maintaining that, installing it, that's all in physical connectivity.

On the logical connectivity side, there is servers that run our client gateways, there is switching infrastructure that basically hooks that all together with the rest of the trading system.

And back to the physical connectivity portion of the system, we set limits -- so in terms of, like, the cost allocation itself, once you figured out how much it costs to run the physical connectivity, or the logical connectivity, there is a maximum number that you can support within whatever you've set up. And you can distribute the cost amongst the -- what you physically have there. So there's a per-port cost you can figure out for the physical connectivity.

On the logical connectivities, again, they're logical ports, but they're still ports. We still have a maximum number that we choose to support, you know, from a resiliency perspective within each one of the client gateways that we operate. So we have a maximum number, based on the servers that we have in our data center. And from a matching perspective, there is the whole rest of the system that basically takes care of taking orders,

sequencing them, matching them, and all the other features that we had within the matching system. They all basically aggregate to produce that cost, as well.

And, you know, there is also all the personnel that goes on top of that. The legal, regulatory operations, product, all of that basically goes into this -- oh, there is some -- I'm skipping right now, but if you put that together you basically get what that cost is for that particular area, and you can just -- you could divide it by some number that really represents your capacity within that space.

So that's where I think that the fees don't necessarily go back to what the costs are. Like, I don't understand what the fee or what the additional cost is to the exchange for another person on a Bloomberg terminal to look at market data. There really isn't any. But there's still a fee that goes back from Bloomberg to a SIP operator, an exchange, because they look at that. Or if Quantlab has another server that is consuming market data, there is really not an additional load on the exchange itself. From a transmission perspective, yes, but not from the perspective where they're just consuming market data. Why add additional fees on the NASDAQ side per machine that's connected? So in those areas I don't think the fees necessarily relate back to the cost.

MS. PIKE: I would agree with that, and that's what I meant in the opening comments, when I said it feels like the fees that are getting charged are tied more to the exchange's perceived value of the data, and how we're using it, as opposed to the cost of actually producing the data.

And I'd also argue that if we were able to look at the cost in light of the way Adrian was expressing, then there would be a vested interest, I would think, as well, to try to drive down the cost, right? So some of the earlier panels were talking about technology, and we don't know where it's going to go, and it's advancing at such a rapid pace, right? So if you're really looking at the discreet costs associated with the dissemination of that data, you'll have a vested interest to try to improve the technology and use lower-cost technologies over time to drive down the cost of being able to produce that product.

MR. FACINI: But we still have Reg SEI responsibilities, so we'll make sure that it's a resilient --

MS. PIKE: Yes, yes, and we want you to do that, yes.

MR. YETTER: Yeah, I just want to jump in here and note that all the costs that people are describing are fixed costs, or fixed costs with slight variation, that they're not marginal costs.

And, of course, in our industry pricing at marginal cost means bankruptcy. You can't do that, you have to cover your fixed costs, and the fixed costs are huge. And, you know, the -- they have to be spread over all the fees that we charge. And if you're doing to spread them over through -- you know, spread them across through some sort of allocation method that's run by the government, that's what you call rate-making. So --

MR. BABYAK: It'd hard --

MR. YETTER: We're still left with the fundamental question of whether we are, in fact, competitors. And I think we are. I think the competition for order flow is linked to all of this and, ultimately, informs all the competition.

MR. BABYAK: I'd make a couple points quickly, if I could.

One, again, we don't know -- it's hard for us to comment on the fixed cost, because none of us know what the fixed costs are.

MR. YETTER: We don't know what your fixed costs are, either, and I think you probably charge a pretty substantial markup, but --

MR. BABYAK: Do you --

MR. YETTER: -- you're regulated differently than we are, so --

MR. BABYAK: Well, why would that be, that we would be regulated differently, since we're a private company and you're an exchange?

MR. YETTER: I understand. But --

MR. BABYAK: Well, but no, you -- this has been a theme throughout, where -- look, you -- exchanges have special -- they receive special protections, special -- in this case -- monopolies, special abilities in exchange for discharging special obligations. And to look and say, well, that widget manufacturer or you don't -- aren't discharging the special obligations of an exchange is a total non sequitur. I mean it's just not a serious argument.

MR. YETTER: It's just at many points we come into direct competition, as you know.

MR. SCHELL: And it's not like so much is granted, the -- and I don't like even using the word -- the special monopolies that was there -- I mean, to some extent, that was earned some commercial way. So obviously, somebody was getting some benefit for what was being done, so it wasn't just bestowed on a group.

And even their own -- if you look -- again, I pull back the SIFMA comment letter that was -- that

addressed -- and some of the points here are spot on, but had a different point of view -- this was about the enhancing transparency of operations of ATSs, about granular disclosures. It would be difficult to keep up to date and give the way products and services may evolve and the way the internal operations, reporting lines, organizational changes, and staffing may change. Public disclosure, proprietary, confidential information could pose unintended consequences. So broadened scope or detail -- it has to be impractical or unhelpful.

The point is that it is not going to be the same across. You know, he has a view of -- specifically, of how he's looking at those expenses. They may be completely different and very commercially -- reasons why other exchange groups may look at them completely differently. And it could convey some cost negotiation or contracts that we've been able to negotiate. Maybe they're lower, maybe they're higher than others.

So there may be some unintended consequences, like I said. And that language that I just read was actually from a SIFMA letter back to the SEC. So this is not new information.

MR. REDFEARN: So let me just try to simplify this a little bit. I think one of the things that we've heard in the course of today and yesterday is a number of

market participants who say, you know, if I want to participate in U.S. equity markets, I need to buy this data, and I need to connect to this market. And just hands down, I can't -- if I'm not connected to these markets and I'm not buying this market data, I can't participate in the marketplace.

So we have that, which we're trying to reconcile in a context where we do see fee filings that come in that are, you know, in some cases, a 50 percent increase from what they just were. And so we're just trying to -- we -- again, we need to figure this out. There has to be some basis of determining fair, reasonable, and not discriminatory in this context because it is different about -- it's not necessarily a product you can say, oh, I want to participate in.

But people couldn't not buy, you know, the Cboe markets data, or the Cboe -- or connect -- maybe they could change the number of ports or the level of ports, but they still need to connect. And probably the virtues in the top 50 firms or whatever it is need to buy, you know, the fast stuff.

So that's -- again, it's that context, where we're seeing that, and we hear, you know, from earnings calls, some of the growth that we're seeing. We just need to figure out how to reconcile that again.

There are reasonable and not unreasonable discriminatory -- we need just as -- I know it's tough. We have a tough challenge ahead of us, as well, that we need to figure out without, you know, going down -- we don't want to get into, you know, splitting babies or rate-making, or all those sorts of things. Those are very undesirable things. But we do have a predicament that we're trying to solve.

MR. SCHELL: So just one minor point that John made earlier that I want to emphasize again is just that I think if you take a longer-term perspective of those changes over time, I think it will be a much better picture versus any one point in time of a change to it.

And I understand, Brett, your request and the challenge ahead, because you've told us now three times, and I think we're getting it. But so I get it. And -- but I do think that longer-term perspective, which I think maybe came out more subtly, but taking a -- looking over longer term will, I think, help create that perspective, as well, again, because of commercial changes in decisions and where that goes. So --

MR. GRAY: Larry?

MR. TABB: I think we're locked into this battle. I think that we're trying to, you know, look into an opaque ball and try and discern different costs

and things. And, you know, it seems to me, from a simple standpoint, or -- simple standpoint, you either need to make it competitive, where there are -- other people can compete for the same service, which is very challenging in this space, or you really need a really good understanding of cost structures.

One that these guys may not want to make public, but maybe make it, you know, privately available to you guys so that they can be aggregated and then somebody needs to make a determination as to is this fair or reasonable or not unreasonably discriminatory. Otherwise, I think we're just in a -- you know, we're just yelling at each other.

MR. REDFEARN: There's no yelling, Larry. There's no yelling. So splitting babies; no yelling.

MR. YETTER: That was angry Chris who was yelling. This is happy Brett.

MR. SCHELL: I've heard Chris yell. He wasn't yelling yesterday.

MR. GRAY: So I think Brett's comments might provide a good segue to -- we've been primarily talking about the SIP, but some -- we started to move, I think, into the proprietary data fees and access services. And one of the things we've been talking about today is not just to -- at all the panels is not just to assume that

SIP products are core products, but to think in terms of where we are today, or other core, you know, types of products that people really need that are not the SIP.

So we also wanted to talk in this panel about the funding of the proprietary data and connectivity services, and the fees for those services. So maybe I'll open up the question. I think it's been touched on, but just as a general question for the panel, do you think competitive forces in the proprietary space are helping to discipline the fees for these services?

Marcy --

MS. PIKE: I'm sorry, I kind of jumped in there. I do -- I have -- seen some conditions where competitive forces, I think, have helped with the fees for proprietary -- and I'll talk about proprietary data products.

All of the exchanges talked about their alternative fee products, you know, whether it's Cboe 1 or NASDAQ Basic -- NYSE has their version of it. And when we saw those products first come into the marketplace, they were priced a certain way by some of the early entrants. The products were missing some things that we needed. So an example of one of the things that they needed when they were first launched by some of the exchanges was consolidated volume. The

exchanges, I think, worked to lobby to get consolidated volume added to those products, because it would make those products more marketable for them.

So, when it was in their, you know, interest to be able to sell these new products, they were right at the table to help with improving the data that was available for those products. And then we watched over time as there was competition amongst the three exchanges, and the key word there being competition. The price points for those products started to drive down over time, as well. So that's why we would be a believer that competition is our friend in this landscape, and it's worked to our advantage.

In the opposite end of the spectrum, we've seen where there is data products that are produced by the exchanges that they would call their proprietary products that -- they have pretty much a monopoly on that data. Corporate actions data that's distributed by NYSE would be an example of that. We saw over a 300 percent increase in pricing for that product, with absolutely no material change. They pretty much own the marketplace for delivering that data and all the third-party vendors out there that sell corporate actions data use that NYSE data as one of their bases for their products.

So where there is no competition in the

marketplace, we have also seen a ridiculous increase in price for those products, as well.

MR. BABYAK: I'd jump in and say again this is not a case of first impression. The impression before the court in their coalition was -- or is the competition, as it related to, at that point, the NYSE and the NASDAQ direct level 2.

And there are actual tests that one uses to add -- to ascertain whether products are substitutable and, hence, whether they're competitive forces at play. And the court came back, as the Commission had subsequently, and said no, there were not, both as to the lack of substitutable products, and also as to the lack of the undisputed competition in the order flow space having any capacity to constrain costs in the market data space.

So again, this is not being raised here as an initial matter, this has been something that has been the subject of litigation going back to 2008.

MR. JONAS: So yes, for the prop kind of, you know, top fees, absolutely, competition has really made a big difference, I think.

When it comes to the depth feeds, you know, as Greg said, absolutely, clear as day, no competition, whatsoever. And it's not just fees that increase, it's new products that are aimed at very specific target

markets that the exchanges seem to know won't be able to say no, because once one participant takes them, everyone is kind of forced to for -- you know, as we talked about yesterday, best ex purposes, as well as just staying competitive.

One of the things that I struggle with is -- you know, yesterday Chairman Clayton told us about how the rest of the world is following our every move, and we're the envy of the global markets. Yet I just cannot get my head around the fact that someone like the London Stock Exchange -- I'm sure you compete with them, but they're presumably a monopoly, as well -- I pay one tenth of the market data cost that I pay in NASDAQ. Sure, smaller volume market. If you look at somewhere like Toronto, a much smaller market, of course, but it's 16 percent. Also somewhat of a monopoly. It just -- I -- it doesn't make sense to me.

MR. BABYAK: I can help you. In Europe the competition authorities aren't precluded from reviewing these products. Here in the States there's a doctrine where if an -- if regulatory agency, the expert agency, occupies the field, that generally keeps the competition authorities -- I wouldn't be surprised if that has something to do with that.

MR. JONAS: And, I mean, you know, I'm sitting

here, looking at the spreadsheet, going over new products and increases. And, for the most part, some of these new products -- and don't get me wrong, they're very innovative and exchanges have invested a lot of money in them, and they should be compensated for that -- but I don't necessarily know if they had asked all of the industry, that they would have even wanted them in the first place.

And so, obviously, exchange is in it to make money. But I was laughing, I was at dinner at STA a couple weeks ago, and I was sitting across from my NASDAQ rep, and he was explaining how his wife had just upgraded her iPhone, and that, you know, how she just had to pay for it for two years, and then she owned it, she was done. And I said, "Well, why doesn't it work that way with my FPGA feed?"

(Laughter.)

MR. JONAS: You know, I've more than paid it off at this point. And it's not just the FPGA, it's Dom time and his team's time, and they've done a great job. But at some point it just feels ridiculous.

MR. GRAY: Okay, we're starting to run short of time. And one thing we definitely wanted to pick up on -- I think, John, you raised it specifically in your opening remarks -- is platform theory. So I want to --

time for you to talk about that, and also to see whether some of the other panelists have a response.

MR. YETTER: Okay, good, thank you. Yeah. I mean we don't believe you can actually divide the exchange up into little pieces and allocate costs and assess, you know, the fairness of fees in that way, because exchanges are, in fact, two-sided platform markets, and there is trading on one side and data on the other side. And the value of one side of the platform depends on the number of participants on the other side.

So data becomes more invaluable, the higher your trading volume. If your trading volume falls off because you're not competitive in that respect, you know, at some point people start to say, "Maybe I don't need that." And, you know, even those who do need it, they don't need quite as much. They -- you know, there are variations that people can make about how much they buy of a product, even if they feel it is very important to their business model.

And the U.S. Supreme Court recently, you know, recognized this economic theory in a case American Express v Ohio. And I just wanted to sort of read a few quotes from that case, which -- because I think they're illuminating.

They said that the fact the two-sided platforms charge one side a price that is below or above cost reflects differences, and the two sides demand elasticity, not market power or anti-competitive pricing.

Accordingly, evaluating both sides of a two-sided transaction platform is necessary to accurately assess competition. Competition cannot be accurately assessed by looking at only one side of the platform in isolation. And evidence of a price increase on one side of a two-sided transaction platform cannot by itself demonstrate an anti-competitive exercise of market power.

To the contrary, to demonstrate pricing above competitive levels, it is necessary to evaluate the platform's pricing on both sides of the transaction platform.

So, you know, we've got a world where there is this fierce competition for order flow. And you know, we can't exist without it. The people who provide it to us call us all the time to give feedback about things we've said. Somebody, you know, misspoke on this panel, you'll probably get a phone call. And there may be shifts in order flow. And we have to be responsive to that.

And -- but you also have to look at the market as a whole, and whether, you know, actually competitive value is being delivered to customers, broadly speaking,

not just, you know, looking at one thing and saying, "Well, the cost is -- this, you know, box of cable is $89, and they charge something else, and so that can't be fair." You have to look at the whole package.

MR. REDFEARN: So Brad or Marcy -- I don't know who would be best to answer this -- I guess the sort of -- tell me if I'm simplifying this properly, but it would -- the notion is that if a market data fee increased that you didn't like, then you would -- could conceivably -- could or would trade less with that particular venue. Think about that, in terms of both principal flow and customer flow.

MS. PIKE: I've just -- I've never seen that practice in any of the firms I've worked at, including my current firm. So that statement is just really foreign to me, to think that those things are so inexplicably linked together like that, that the behavior on one side of the house is affecting the behavior on the other side of the house. I don't see that happening. I don't know about you, Brad.

MR. JONAS: Yeah, when I think -- if a change in the data feed is not really going to -- you know, we don't have a knob where we just say, oh, let's punish NASDAQ. It's based on what's happening in the market. The more market activity we see, the more we trade.

And just, you know, to speak to this platform model, I totally agree. And actually, when I first started looking at it years ago, I would say to my NASDAQ rep, "Why can't you guys just look at our overall cost holistically?" Because I pay for a cross connect that's high in cost, or in price. I pay for access fees, session fees, dedicated gateways, ports, transaction fees, then the market data fee, and then you're getting the SIP revenue back on it.

It's just -- it's like I'm getting hit every step of the way. And there's got to be some kind of happy medium. But obviously, what I was told was the Commission doesn't allow looking at pricing in a holistic manner like that.

MR. YETTER: Well, and what I'm saying, though, is that you have to look at the cost to execute trades, because that's part of the picture, too. And that's extremely low, right? And in some cases, negative -- many cases, negative.

You have to look at, you know, how much SIP revenues flowing back to people through their reporting of trades to dark pools, which is another form of competition against exchanges. Nevertheless, we, you know, effectively encourage that by -- because the demands from the industry are that we share that revenue.

So you kind of have to look at it all together and not just say, well, this cost seems high; what about the costs that are extremely low or negative?

MR. FACINI: Isn't that a commercial choice that the exchanges make to be competitive in that space? And now you've basically pushed that decision back on your customers to continually increase the cost of the other products that they do need to stay competitive?

MR. YETTER: No. I mean we have to cover our fixed costs. And if we were charging marginal costs or negative pricing for everything, we would not be in business.

MR. FACINI: Definitely not for everything.

MR. YETTER: So there is --

MR. FACINI: You could recoup them somehow.

MR. YETTER: You -- yes.

MR. FACINI: But more reasonably.

MR. YETTER: You charge an --

MR. FACINI: Fairly and reasonably, actually.

MR. YETTER: You charge an extremely high transaction cost, so you have a different business model.

MR. FACINI: Sure.

MR. YETTER: And that's competition.

MR. FACINI: I think Brad pays more in his transaction fee costs on a single transaction on your exchange and not ours. I don't think ours is extremely expensive.

MR. GRAY: So we're almost out of time. So maybe for just one last question that's probably pretty related to the platform theory -- was just to ask specifically with respect to at least some of the proprietary data products and services.

Do you have an alternative if, you know, you thought that the price was too high for these products? Is there, in effect, an alternative that you could move to and provide some price discipline?

MR. JONAS: Looking at just the market data, potentially, but looking at the platform, overall, I -- and this is probably not even allowed and also way too burdensome, but it almost comes down to each individual participant.

And, you know, I think yesterday someone mentioned that one of the -- you know, most of their participants were getting everything paid for in rebates, anyway, that they weren't paying anything to the exchange. Not in my case.

So I don't know that there is a one-size-fits-all model there. I think that, for the exchange's sake, as well as ours, if you do a proper business case before releasing some product -- meaning check with the market,

make sure they actually want it, instead of just forcing it on us, because you released it and the first person has to take it, so then everyone else does. That's a good step in the right direction. And, you know, there's no point in spending a bunch of money in R&D and rolling out a new product.

And the other thing, too, is just simplifying the products, too. I think, you know, you maintain two or three different types of cross-connects, two or three different types of feeds. Bring it down to one. You can reduce your overhead there, presumably. Make it a fair and level playing field for all of us, for all of the, you know, end investors, and simplify your work flow and lower your costs. You know?

MR. GRAY: Thank you, Brad. And I want to -- we're at the end, so I want to thank all of the panelists for what I think is a very illuminating discussion of some of the issues that come up.

I think maybe to pick up on some of the way Brett has expressed the issue for the staff and the Commission sort of -- to paraphrase maybe John F. Kennedy, we're not asking these questions because they're easy, but because they're hard. And I think maybe some of the debate has illuminated that. But that's been really helpful, and we appreciate you all taking the time

to be here.

(Applause.)

MR. GRAY: So we're going to take a 15-minute break, and we will start again at 3:00 for our last panel.

(A brief recess was taken.)

MR. GRAY: It's just amazing how quickly that works here. Say, "Take your seats," and everybody gets quiet very quickly. I was saying a lot of industry events that usually takes a little bit longer.

So should we start early? Then maybe we can end early.

(Laughter.)

PARTICIPANT: It's Friday, Brett, that's how that works.

MR. GRAY: Is that a good idea?

(Applause.)

MR. GRAY: Let me just say, first of all, because I know people may start running out of here at some point, thank you all so much for joining us, thank you to all of our panelists from throughout the course of the two days. It's been really helpful discussions, really great participation. And I know I'm front-running that a little bit on this particular panel, so -- but I'll just say in advance, that's -- it's been really

helpful, and we appreciated all of you all being here. And again, we're very enthusiastic about having continued engagement. Also, as follow-up on the common file and elsewhere, because these things obviously don't get figured out in a day or two days.

So, with that, let me turn it over to Mark Donohue, who is going to lead us through the last panel.

MR. DONOHUE: So welcome back. I'm -- trust you all are here. And thanks to you guys for coming up here. We've saved the best for last, of course. This final panel is about transparency.

Obviously, market data and transparency go hand in hand. So let's begin to be transparent about our panelists. So can each of you please introduce yourselves?

MR. CARRAI: Good afternoon. My name is Kevin Carrai. I'm the vice president and global head for market data and access services at Cboe Global Markets, overseeing the development strategy, pricing, and policy related to market data and access services. Prior to Cboe I held roles at BATS, Direct Edge, and also NASDAQ.

I would like to thank the Commission for inviting me to participate on today's panel, and I look forward to the discussion.

MR. DONOHUE: Bill?

MR. CONTI: Bill Conti. I have been working at Goldman Sachs for the last 14 years managing market data. I've been managing market data for over 30 years. That's all I've done. And for the last two years plus I've been an advisor on the CTA-UTP operating committee as an institutional representative. And also I'd like to thank Brett and the Commission and everyone, panelists and everybody, for this roundtable.

MR. DAVIS: Hi. Jeff Davis. I am vice president and chief counsel, North America, for NASDAQ, Inc. I have been at NASDAQ since 2000 and, before that, at the NASD, doing enforcement and disciplinary work. Currently I oversee our regulatory work for equities, options, fixed income, and commodities here in the U.S. Very happy to be back here at the SEC.

I will say I -- when I started at NASDAQ I served as our rep to the UTP operating committee. It's been a while since I've been there, but there are a lot of familiar faces here. So thank you very much for the opportunity.

MR. GELLASCH: Hello. I'm Tyler Gellasch, the executive director of Healthy Markets Association. And prior to launching that with a couple of colleagues in 2015 I served here as counsel for a commissioner. I was also in the United States Senate staff. And I'm thrilled

to be here today and thank you for hosting the event.

But contrary to what some of -- we heard yesterday about there being an absence of non-profits, we actually are a non-profit and are investors. And frankly, we might not be here if there were more non-profits in the world.

But I want to begin by thanking you very much and I look forward to the remarks.

MS. HINMON: Hello. I would like to thank the Commission for the opportunity to speak this afternoon on transparency. My name is Melissa Hinmon. I'm currently director of equity trading at Glenmede Investment Management. Glenmede runs a variety of liquid alts, fixed income, and equity strategies primarily for institutional investors. I have 32 years of business in the industry on various capacities, both the buy and the sell side. In addition to other industry responsibilities I do serve as NYSE ARCA's participant selection for the UTP CTA advisory committee.

The opinions I share today are mine alone, and they are not that of Glenmede Investment Management, nor are they that of the advisory committee.

MR. MASSO: Good afternoon. Thank you. I'd like to thank the Commission for inviting me today. My name is Anthony Masso. I'm the co-founder and president

of Succession Systems. Succession is a technology firm that offers market access compliance technology. Our solutions currently include pre-trade risk, real-time portfolio management, surveillance, and post-trade compliance reporting. We operate in the U.S., Canada, and Europe, across multiple asset classes. Our customers include large banks, buy-side firms, small broker-dealers, and clearing firms.

MR. STEINER: Good afternoon. I'm Rich Steiner. I'm responsible for electronic trading strategy at RBC Capital Markets, where I've worked for the past nine years. At RBC one of the areas we focus on is improving trading outcomes for institutional investors, which gives us a good perspective to opine on these topics. We are also active participants in Washington, meeting with policy makers and regulators to advocate for more efficient, more transparent, less conflicted markets.

And today I'd like to thank the chairman, the commissioners, and the division of trading and markets for having us here today. We look forward to our conversation.

MR. DONOHUE: Thank you, panelists. Earlier this year in a speech announcing our roundtable, Chairman Clayton laid out a principled approach to equity market

structure. One of the guiding principles is facilitating transparency. He said, "Regulations that promote public access to material information can empower investors and also can energize the competitive forces that benefit investors. In this way, transparency can substantially reduce the need for overly specific and prescriptive restrictions on conduct that can impede competitive forces and in an evolving complex system, can become outdated, ineffective, and counter-productive."

Over the years, the SIPs have made significant progress to improving transparency. Their websites contain metrics regarding latency, capacity, volume, and subscribers. They recently added disclosures for revenues and distributions and a plain English description of the revenue allocation formula. They also publish summaries of the quarterly operating committee meetings.

Our rule filing process also provides transparency into market data, both for the SIP data, proprietary market data, and access fees. But concerns have been raised that the existing disclosures are inadequate and do not provide enough information for the market participants to make informed comments and for Commission to make findings.

As we're nearing the end of the day, let's jump

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right in. To organize our discussion, let's begin with transparency related to SIP process, and then move on to rule filings. And then, if there's time left over, we can discuss our weekend plans.

(Laughter.)

MR. DONOHUE: So, Bill and Melissa, you're both on the advisory committee. Can you talk to us about issues related to the transparency of the SIP process to begin the panel?

MR. CONTI: Sure. So first, as I said before, I've been in market data, as a lot of folks here have, for a few decades. You know, back in the '80s and '90s we saw technology evolve at a slower pace, right? Green screens, video switches -- remember video switches? You know, LANS. I think we're at a point now where technology is moving at a pace almost faster than time itself, it feels like sometimes. It's hard to keep up with. And that's for everybody, I think, making policies in a time when things are moving so rapidly. It's difficult. It's difficult to keep up with making those policies to address today's technology, no less looking forward to the technologies in the future.

You know, we've heard a lot of talk here about the overall cost to trade, the transaction side versus the market data side, you know, and it's real apparent

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that -- and actually, it was just said on the last panel, which I find surprising, that to be competitive in the transaction space, exchanges are willing to take losses on that side of the margin. So where are they making up those revenues? They're making up the revenues on the market data side. I think that's what everybody here has been saying and been pointing to.

So again, somebody mentioned the balloon effect, as you're squeezing the transaction revenues. They're looking to get it somewhere else where there is not -- where there is a monopoly, okay? So it's competitive on the transaction side. That's why fees have come down. It is not competitive on the -- especially on the proprietary data side, where we have not seen fees come down. We have really only seen them -- we've only seen them go up.

You know, we realize, again, on the consumer side, how much cost and manpower it takes to collect, process, disseminate -- you know, a lot of talk about cross-connects, connectivity fees. Again, the exchanges are dealing also with third parties. I think people here on the East Coast are familiar with Local 3, the International Brotherhood of Electrician Workers. No, cross-connects, unfortunately, are kind of expensive down that road.

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What we would like to see, though, is transparency, full transparency. And I know you're talking about the SIP, but I think we need transparency on both sides, the SIP and the prop side.

We applaud that the SIP has started to make revenues public, some revenue data. We think it's a big step. We think that there are steps that have been progress. But we started from a black hole, right? So we started from not knowing anything.

Some of the data that's been -- revenue information that's been released, while applauded, does not show the whole picture. And I think that we need full transparency. We're advocating for full transparency 100 percent, not just from the SIPs, but from the proprietary sides, as well. Again, Cboe has said that their SIP revenue is, you know, two or three times more than what their proprietary revenues are for market data. I don't think NASDAQ and NYSE will have the same view on that. I think that their -- we perceive that their revenues on the prop side are pretty deep and pretty wide.

To get to what we'd like to see, a cost base model, which we do think it should be, we need that full transparency of all revenues from SIP and from the prop side. And we're talking, yeah, by product line, too,

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right? Pro, non-pro, level one, open book, ARC book, total view, connectivity fees, access fees, internal distributor fees, external distribution fees, per query. We should -- and look, if some of this is confidential and shouldn't be released to the public, it should at least be given to the Commission. One hundred percent disclosure is how we feel we can get there.

We've heard a real lot of stats and numbers go back and forth: 3,000 percent increase, 1,110 percent. We've heard, you know, the revenues are flat. We've heard the fees have stayed flat. We heard somebody in the last panel say that non-display fees have come down. I haven't seen them come down.

I think the only way we're going to get to the end game and real transparency is 100 percent disclosure by the exchanges, SIP and prop side. And that is, again, granular on the revenue side, granular on the expense side. The expense side for all those things I just listed: direct expenses, indirect expenses, shared expenses between the SIP and the prop side. I don't think the Commission can really make a rational, justified decision on the reasonableness and fairness of fees unless they have all of the information. And probably not all of the information, just current. Probably an analysis over the last 5 or 10 years or so.

Again, we hear that certain fees, you know -- maybe be open book or total view fee hasn't changed in five years. But the -- you know, the access fees went up, or the non-display fees went up, or one of the other. And it's a cute game, you'll alternate them every year so that a fee hasn't gone up in five years. But every year there are new fees or increased fees that are being introduced.

You know, since Reg NMS and since the exchanges have become for profit, they have a -- you know, a consolidated, acquired other exchanges, right? NYSE was four exchanges, Cboe four exchange. NASDAQ has swallowed up a few things. They used to be different data centers, different -- completely different operating units.

There are synergies that the exchanges have been able to take -- and again, for profit, you want to do the right thing for your shareholders, I can appreciate that, and you want to show the bottom line. You're going to acquire assets, you're going to build your revenues. You are, however, also streamlining your functions. There's overlapping functions, there was overlapping people. Systems converged. There were a lot of efficiencies and savings, I'm sure, that the larger parent group enjoyed, and none of those savings or even fees staying flat were passed down to the customer. So

we recognize that, as well.

To the point of -- somebody had spoke about administrative burden. Another thing we would advocate for and like to see is on the administrative side we would like to see the policies standardized, harmonized.

You know, just to go back to transparency, though, we would also like to see transparency delivered in a standardized and consistent way, full transparency. This way we can compare apples to apples, where we want oranges to oranges, where we want -- we'd like to see that across all of the exchanges, the same granular -- and it can be done. The auditors certainly know. I mean they know all the details. They come in and they audit us. They know exactly how many users of every one of these servers and what the revenue coming in is.

Back to the administrative burden of administering all of this, if you look at the fee policies for the exchanges here, all the exchanges, and even globally, every fee schedule, it's just the fee schedules. They're 20, 30 pages long, dozens of footnotes. They're very complicated. They are not even consistent within an exchange, a lot of these policies. It gets very, very difficult to administrate.

You know, even within NASDAQ, for an example, non-display, the SIP is a separate UTP. They have

categories. NASDAQ, for depth of book, they are counting servers, and they put them in tiers, and you pay for a tier. For BX and PSX you're counting servers. They're charged as a users. For NASDAQ for the OMEX stuff, I think, there's a different policy. Very difficult to administrate, very difficult to have all of these rules in our systems. An auditor's dream, right? Because there's so many different rules.

Are we enforcing them correctly? And when we're not, they jump all over that. And with regards to transparency, we think audit -- the audit numbers should be included in that transparency of the revenues, because that is a business line now. It shouldn't be, but that has become a business line, auditing. And it's quite burdensome to us to put all that information together.

So again, we feel -- and there's been a lot of numbers and a lot of distractions thrown around. And Brad from -- said the other day, we just want to see that full transparency, at least to the Commission. As much as can be made transparent to the public should be put out there. But there should at least be 100 percent full transparency on all revenues and all expenses to the Commission, so that they can make rational, justified determinations on the reasonableness and fairness of the data.

The -- and Cboe does a little bit better of a job of reporting on that stuff in the quarterly reports. We'd like to see more. We'd certainly like to see a lot more from the other exchanges that's public. If it can't all be made public, it should 100 percent be made available to the Commission.

The reluctance of exchanges to do that 100 percent can -- it perpetuates our suspicion that the market data fees are just egregious and too high. Maybe they're not. They might not be. They might be justified, they might be fair and reasonable. We won't know until we have all the information to make -- or at least the Commission won't know until they have all of that information to make those determinations.

I think maybe I'll stop right there for now.

MR. DONOHUE: Thanks, Bill.

(Laughter.)

MR. DONOHUE: Did he leave anything for you, Melissa?

(Laughter.)

MR. CONTI: I have more. I'll give you some of my notes.

MS. HINMON: All right. I'll just turn back to you, then.

All right. I -- as a institutional equity trader, I believe exchanges do offer significant value proposition, play a very important role in integrity of our markets. But because they are so important, full disclosure allows us to be better consumers of data. It might help dispel any misunderstandings, especially how committed the exchanges are to allocating resources to enhance the competitiveness of the SIP versus how resources are being allocated to enhance their proprietary products.

A few discreet examples of how transparency could be further improved include fees, infrastructure, and basic -- more specifically. Disclosure of SIP direct admin costs and framework around how fee-setting is tied to those costs and/or market share. Details around the accountability for performance, for performance monitoring, public disclosure of outages and latency. And I think it would be good to know about any potential conflicts of interest and how these are mitigated or dealt with, including -- though not limited -- of the executive sessions and, of course, voting rights, to name a few.

MR. DONOHUE: Thanks, Melissa.

Rich, your firm, RBC, was one of the many capital market participants which signed the petition for rule-making concerning market data fees. Can you walk

through some of that that's relevant here, and give us your thoughts on SIP process transparency?

MR. STEINER: Sure. Thank you, Mark. So the petition you're speaking of was submitted to the SEC last December, last year. It was signed by 24 firms. In addition to our firm, RBC Capital Markets, Citadel signed it, Bloomberg, Morgan Stanley, UBS, eTrade, and on the buy side we had Fidelity, T. Rowe Price, MFS, and Vanguard, to name a few.

So regarding the actual proposals, there were a few asks. We proposed a rule requiring disclosure of certain information on equity market data fees.

We proposed the SEC remove section 608(b)(3)(1) from section -- from SEC rule 608. And this is around immediate effectiveness. So the rule amendment would preclude SIPs market data fee filings from becoming immediately effective. And we would require a public notice and comment period prior to the SEC's approval or disapproval of any fee changes, thereby allowing transparency and stakeholder input.

And third, we proposed the SEC study equity market data fees. So we suggest the SEC review -- consider the development of a more robust and transparent framework for assessing market data fee filings. In particular, the SEC may want to enhance its economic

analysis or require the SROs to provide a more enhanced analysis that includes not simply the direct impact of a fee increase, but also the indirect impacts on distribution and usage channels, including whether the data contribute or detract from market efficiency and competition.

So, you know, ultimately, this comes down to transparency and disclosure. And granted, after Bill and Melissa's 15 minutes or so touching on those, I think they hit on quite a few. But what you're seeing here is the fact that it's challenging for market participants to have an idea of what -- of if what we're paying is reasonable, because we have nothing to compare it against, right?

For starters, it's been made quite clear over the last two days it's -- there is no competition. It's not little competition. There is actually no competition, right? We have to provide -- we have to go -- you know, take in proprietary market data feeds from the exchanges.

We've heard folks up here -- again, over the last couple days -- say, you know, some will debate it's commercial enterprise, or a commercial decision, that they need to take in proprietary data feeds, perform at electronic trading platform. Our firm does, we need to,

but I would posit that that is not a commercial decision. That is a decision that we look at providing best ex and our best ex obligations. And so there is -- while technically the SIP provides for best ex from a regulatory perspective, there is a better best ex in getting faster feeds and faster connectivity. And so our clients demand that of us. They look at that as part of their best ex obligation and their fiduciary obligation, as do we.

So, to have no competition in that environment, a pay for play kind of mentality, is troubling. And again, that's one of the key things that I think this proposal speaks to.

MR. DONOHUE: Thanks, Rich.

Anthony, you come from a reg tech vendor. You have a different perspective. Can you tell us what concerns or -- you have about transparency, or whether you feel like we're in the right balance right now?

MR. MASSO: Sure. I can speak on behalf of the clients that I deal with. I mean in my business, basically, we deal with a lot of these costs. We help them through the costs that they have to subscribe to market data. And I can tell you that many of them are just -- I think the confusion comes from there's not enough transparency around, like, the entitlements. How

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do they determine, you know, some of these definitions?

People feel like they're paying for things two and three times, that they're very arbitrary. And I think that's a big frustration. And it starts to feel like, you know, you're being ripped off, even if you're not, because you just -- you don't understand the whole process.

And I think also they kind of live in fear, as a result of that. Because on the other side of that is, you know, the exchange that -- you know, we've heard from the other panelists on the prior panel that, you know, they've kind of built -- these firms have built, like, a whole division around just keeping track of entitlements, keeping track of the number of users, the number of servers. You know, non-display fees are particularly troubling for people to wrap their heads around for some reason. And maybe it just needs, you know, more hand-holding by the exchanges.

Maybe they can, you know, kind of come in earlier in the process when someone is subscribing to data and sort of explain it to them. Right now it's -- the process is not -- isn't managed very well, I think. You know, you subscribe to a data center, let's say, to -- or a company to pull the data. And right away, if they're distributing that data to you, they point you in

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the direction of the number of exchanges that you need to subscribe -- you know, that you're going to take the data to fill out these entitlement forms.

But there is not much help around there, there's not much conversation. You go to a website, you fill out a form, you describe how you're going to be doing it. And you just don't get any feedback. And I think that's part of the problem for a lot of firms.

MR. DONOHUE: Thanks, Anthony.

Tyler, you've had some comments in our common -- which we appreciate, and we encourage everybody --

(Laughter.)

MR. DONOHUE: So perhaps you'd just jump right in.

MR. GELLASCH: Yeah.

MR. DONOHUE: And tell us what you think about SIP transparency and processes.

MR. GELLASCH: So I'm going to try to be brief with my comments, but you all know I struggle with that. So I generally think it's usually the 168th footnote that is the one that's really going to persuade people.

But, you know, as we start the discussion, we've heard a lot of discussion, particularly yesterday and today, about how much the exchanges make on market data. And we've also seen a lot of interplay of -- are

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you paying for trading by subsidizing with market data was just heard earlier.

Frankly, I'll start with something that might be shocking. I don't care how much the exchanges make on market data. I just don't. The Exchange Act doesn't care on how much the exchanges make on market data. Although I do appreciate how much the CTA and the UTP and the distributed revenues and the enhanced transparency there.

The Exchange Act, actually, the law, cares about how the exchanges make their money. And when the SEC adopted Reg ATS and expressly authorized the demutualization of exchanges, it dedicated about one paragraph to the whole discussion of what that might mean to the regulatory framework. There wasn't a whole lot of discussion at the time, and it makes sense because people wouldn't think how is this going to impact the markets in ways that people couldn't imagine.

We're going to see -- thank you -- but we -- you couldn't imagine there would suddenly be dozens of complex order types. You couldn't imagine that there would be hundreds and hundreds of pricing tiers. And you couldn't possibly imagine that there would be all these new market data offerings. And I'll use as an example one.

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You know, 2012 connectivity, just for an example, at one particular exchange was $2,500 for a 10 gig connection. Then it goes to 4,000, then to 6,000, then to 7,000, then to 7,500 this summer. At what point have we boiled the frog? Each of these things is about how the exchanges make their money, and that's how I worry about it.

So I worry about how can a small firm compete when it costs $50,000 per month to get NYSE integrated and NYSE American and NYSE Arca, connect them all, and that's before sending a trade. That's before connecting to the other exchanges. I worry about how a buy-side firm is going to be measuring its best execution quality -- and apparently we've had some discussions about that over the last couple of days -- when they're comparing their executions to stale prices.

So I think we are talking about transparency, but I do think we have two different buckets. First, what should we get from the SIP? And, obviously, the SIP isn't enough information, we've heard that a lot. And it isn't fast enough. We've heard that a lot.

So we'll start with the conclusion. I don't understand why it can't be at the same speed as the SIPs -- the SIP can't be at the same speed as the prop feeds. I also don't understand why it can't include depth of book information, auctions, and odd lots.

As for the costs, we need to know them, for the reasons articulated many, many, many times. Distributed revenues are nice, but we need to know the costs. And it's a public utility, it should be regulated like one. That's not me saying that, that's the government saying that. Congress said that in 1975.

And by the way, you know, as we look forward, we have to think, you know, what did we see yesterday? I was stunned yesterday when we saw a regulator ask a regulated entity on stage, "Could you provide us with some information about things?" And the regulated entity said, "Nah, this isn't an earnings call. Sorry, we're not going to do that." We have a lot of regulated entities here in the room. I don't know many who would get that by their general counsels, right, who would say, "Yeah, no, we think in a public forum it's a good idea to do that to your regulator."

And by the way, with respect to Bill here, and I appreciate his thoughts about maybe just give it to the SEC, I would argue not good enough. Because I don't have confidence that the SEC has the resources dedicated to understanding these things. I don't think that they have the economists. They have some economists, but frankly, not enough dedicated to this.

So the second set of questions I want to talk about also addresses the first, which is what should exchanges and the SIPs plans be filing? What should the contents be? We've heard a lot of talk about reasonability of fees. I think that that's a little bit of a sideshow, as well, and I think it does run the risk of getting into rate setting and cost setting conversations. I agree that we need to know that information, but I'd also say the Exchange Act is really clear, what the expectations are. It has to be a reasonable fee. It has to be equitably allocated. We don't seem to see a lot of discussion about that.

You know, it's gone as premise today that some firms are paying a whole lot more for trading and data than others. That's been a discussion that we've all talked about. Well, why is that? And who are those firms? So is that really equitable?

Same thing with discriminatory. These filings have to be non-discriminatory. And one of the things I find really interesting about the filing is, well, if I were to think about how do I determine if something is discriminatory, it's hard to know that, unless you know who gets it, who doesn't, and what it is. And if you read any of these filings, you don't know that. You don't know who is actually buying the thing, who is not

buying it, and what the impact of them is.

And then, on competition, what's the competitive value of the service they're offering? Is it really something that's going to make them materially more competitive? We heard it over and over and over again over the last several panels, that you need to buy the fastest information and the most comprehensive data feeds.

So as I sit here and think about it, how do we know if it's going to be affecting a competitive burden if we don't know who gets it and what it is. And the only people with that information are the exchanges themselves and they have not provided that in nearly any of their filings.

So I want to say -- I want to thank the Commission, frankly, for, over the last year and a half, really starting to dig in. And we've seen it in a number of filings, and we saw it last week, and trying to enforce compliance with the Exchange Act.

But there's a lot more to this than just the reasonability of fees. And frankly, that's what I am concerned about, is that the discussion will be what's the profit margin, what should be the profit margin on SIP? Is it 10 percent? Is it 90 percent? The last time it was disclosed it was 89 percent. That was two decades

ago. So the question is what should it be?

I think that that's only part of the discussion. I think when it's 95 percent, that's a big problem. But I also think we ought to be thinking about what the effect is on competition. Thank you.

MR. DONOHUE: Thanks, Tyler.

Kevin and Jeff, I appreciate your patience. But now is your time.

Jeff, can we start with you?

MR. CARRAI: Unless you're good already.

(Laughter.)

MR. DAVIS: I agree with everybody on everything. Well, and we do agree on a lot of things.

I think, you know, our starting point is that, you know, transparency is really the core of NASDAQ's history, its culture, and its values. NASDAQ markets are transparent. We provide, you know, public prices for investors, issuers, and members. The SIP creates transparency by offering prices for Main Street and, frankly, the world. As self-regulators we have transparent rules and transparent fees. As a regulated entity, we have complete transparency to the regulators, to Bill's point. And as a publicly operating company, we are transparent to our investors. We understand transparency. And we agree with Chairman

Clayton, when he said that the process of becoming and operating as a publicly operating company tends to make companies healthier. And that is definitely true of NASDAQ.

I also want to start by saying, you know, we have heard what the industry has been saying for the last two days. We have heard, you know, sensible and immediate ways for NASDAQ to improve the firm's experience with market data. We hear it right now. The contract administration, the billing administration, I -- you know, we can commit to improving on those things. Frankly, any publicly operated company should make it a priority to make it easier for their customers to use their services. And I unhesitatingly commit that we will work to improve those things, and we have heard those loud and clear.

Now, with respect to non-core data, for us it is a question about the role of government. We are hard pressed to find a public policy rationale for more intrusive government regulation here. The Commission has often said that producing and purchasing proprietary data is voluntary. And the pricing can be set by market forces, provided that the market is competitive, and we believe it is.

I will tell you that at NASDAQ we do not feel

like we are a monopoly. We have, you know, roughly 19 percent market share. I don't think there's a major operating exchange that has more than 25 percent market share. And the last time I looked, 19 percent market share does not make you a monopoly.

The SIP, on the other hand, is -- I think we can all agree is a public good, and we share the industry's view on that, that transparency and SEC oversight should be extensive and, you know, we think they are now. I don't think I can say any better than Emily did on panel five all the steps that have been taken to improve transparency at the SIPs. So I won't repeat that. But I will say that we support building on the improvements that have been made over the past three, four, five years.

So in our written comments you will see that NASDAQ has committed to support adding an advisor vote on the operating committee. This has been the subject of a lot of debate. We sense, like Bill was saying, that it is really borne out of mistrust. And we think that having an advisor vote on the operating committee and, frankly, go to the executive sessions -- I mean provided all the privilege and other, you know, conflict information can be worked out, which I'm sure it can -- we think it'll go a long way to dispelling that trust

(sic).

And, you know, we also support the live streaming and recording of the operating committee meetings, which, thankfully, I don't go to any more.

(Laughter.)

MR. DAVIS: But, you know, I -- like John Ramsay. I think people will be thoroughly disappointed and bored when they get to see what happens at the operating committee meetings. So, you know, I -- right?

You know, as far as regulating cost disclosures, I mean, we start with the fact as -- you know, it'll be no secret to anybody that the SIP revenues have been, you know, stable to declining by any measure, that the SIP revenue -- the SIP data is made available to retail investors at, you know, little to no direct cost to them. And, you know, the hesitancy we have around, you know, deeper discussions into cost disclosures is the fact that the technology and administrative costs of the SIP are really just a fraction of the true economic cost of generating the data.

And I will say, I mean, I listened to Dan say it earlier. The Commission looked at this in 2010 and said, you know, "This is what the revenue is, and these are what the costs are," and they looked at it in 1999 and said, "This is what the revenue and this is what the

costs are." And the difference was really clear, all the way back there.

The problem is you have to look at what the purpose of the SIP is, and what the purpose of the SIP revenue is. And it has been acknowledged all throughout that time that part of the purpose of the SIP and part of the purpose of the SIP revenue is to help pay for the cost of generating the quotes that go into making up the SIP data. You have to -- the exchanges have to generate a quote that contributes to the SIP data that is reliable, that is the product of a well-regulated process. And it has always been acknowledged that some portion of the SIP revenue is dedicated to helping to support that other economic cost of running the SIP.

You know, we -- you know, Bill, we agree with you 100 percent. We should have complete transparency to the regulator, and we do. We do have complete transparency to the regulator. We are examined regularly and routinely and often. We have complete transparency to the regulator. We give them lots of information. We will give them all the information that they ask for. We don't think it should be public, but I -- you know, and I know that, you know, when you don't see it, it breeds mistrust, but, you know, we have complete transparency to the regulator. We answer all of their questions as, you know, fully as we possibly can or, you know, frankly, we are at risk of enforcement actions. So, you know, I don't know, you know -- I don't know that people were aware of that or not.

Just to a couple of points, and then I'll wrap up that, you know, people were talking about earlier. The statute. The Exchange Act. I mean, you know, sorry, I'm a lawyer. What happens at the Commission and what happens at the markets and what happens for all of us who are a part of this ecosystem starts with the Exchange Act of 1934.

The Exchange Act of 1934 says that exchange filings in certain categories are immediately effective, right? That includes fee filings. It's right there in the statute. The statute was amended in 2010. The category of fee filings was explicitly changed to include market data fee filings because Congress, not the Commission -- Congress decided that they were of such a character that they should be immediately effective. Now, they are also subject to notice and comment rule-making. But, you know, if you want to talk about immediately effective filings, it is a big, big issue.

To the -- again, to the statute, the idea about non-discriminatory, that is not quite what the statute says. And it's not quite what the rule says. The rule

says not unfairly discriminatory. And there is a lot of history around what that means. And, you know, we were happy to talk about the details. Not unfairly discriminatory has generally been interpreted to mean differentiation is allowed if it is justified.

And so we have a lot of differentiation in the rules that has been there for a long, long time. We differentiate between professionals and non-professionals, between display and non-display, between distribution and usage. We differentiate based on volume. You know, you give your highest volume users the biggest discounts. Standard practices in every industry out there and 100 percent consistent with the Exchange Act.

I mean we're happy to talk about, you know, what should be in the rule filings. Frankly, we think we do put a lot in the rule filings to explain why we're differentiating and what the basis is. We don't think anybody wants us to say -- and I don't think you meant -- you were saying this, Tyler -- we don't think anybody wants us to say who is exactly buying those products, you know, we don't think the firms would appreciate it very much. We would -- you know, we're happy to do that, if people want. But --

MR. GELLASCH: I'd like to point out, by the

way, I was --

MR. DAVIS: Yeah, I was just about finished. I'm sorry, Tyler.

If I could, so, you know, I think -- you know, just to wrap up, I mean, we get the points about, you know, best execution and there needing to be some clarity. We get the points about Reg ATS and, you know, and promoting competition. We're happy to talk about those. But I think we -- you know, we have to go back to the starting point, which is what is the public policy rationale for further government intrusion?

MR. DONOHUE: Tyler, before you go, I want to give Kevin an opportunity.

MR. CARRAI: Please, just for a few minutes, and I promise I'll be short.

Look, I think it's important, again, to note that, you know, the exchanges are, by far, the most transparent part of the life of an order in today's equities market. Virtually everything we do as an exchange is outlined in our rule book and readily available for anyone online. The manner in which we book, display, and execute orders is an -- entirely transparent. And then, like most of these, our fees must be submitted to the SEC staff for review, and they are published in the Federal Register for public comment.

From the products we offer to the fees we charge, all the information is publicly available, scrutinized by the Commission, and implemented with their review or approval.

As we know, there has been an argument, clearly, for greater exchange transparency, and we welcome that opportunity. There is more work to be done in transparency.

But I also -- and Mark, you alluded to that at the start of our meeting -- there has been a lot of work that we've done already. We've increased the number of advisors. We have built, I think, excellent relationships with our advisors, and we've made meaningful changes through collaboration with our advisors and our participants on some changes that definitely have moved the ball forward. And I think that we can do more.

Look, we've talked about executive session policies, which we believe that we can add to. We've talked about conflict of interest policies, which I think are possible, potentially, through an amendment to the plan, that if we work together -- if we work together and again, collaborate and come together from our corners, we can create something that's a good starting point for us. And we can build upon that. So I do think that there is work that can be done there.

And once we implement those conflict of interest policies, then you have the confidentiality policies. So I think the confidentiality policies is also really, really important to make it free and open among the advisors and the participants to be able to speak without having a fear that the next day, you know, a -- just a, you know, a completely thought-out item or proposal will be in the paper next day for you to have to address.

So I think that we can get there. I think it's going to take some time. I think it requires collaboration, it requires compromise. But I definitely believe that it's possible.

One of the things that I want to mention here is, you know, we talked a little bit about -- Bill has talked a little bit about the way in which the policy aspect and the reporting aspect works with regard to market data. What the operating committee has done to try to help that along in terms of what we call audits, or market data audits, is to develop a system -- CTA has developed it, it's called UCert, where you can provide information on your customers and get a report back that shows you whether or not that individual could be a professional. And that's very helpful, because, you

know, we are certainly not interested in the gotchas. We're not -- you know, everyone might talk about, oh, wow, look how much they made in revenue recoveries.

But the fact is, if we had no recoveries, it would be great, because that means that people -- the -- those are taking our data and reporting the usage, or reporting the most accurate usage possible. They themselves want to make sure that they've got the appropriate categories. Because again, you know, if it's the case that they're charging their customers for professional use, they don't have an opportunity to go back and say, oh, by the way, you know what? I should have charged you for a year's worth of your usage, right?

Here's the thing. We only have one firm that's using it. Only one. So why is that? Why is it that we only have one firm? We've got a system available to help them manage their usage, but yet we have one firm that's taking advantage of it. We need more to do that.

And I don't know if it's that it's a trust factor, you know, it's sort of like, oh, geez, I give you my data and all the sudden you're going to then hit me up with an audit, or something. We got to get past that, because I know that we can help our customers do a better job in making sure they're doing the reporting and paying their fees accordingly.

MR. DONOHUE: Sorry, I appreciate that. I'd like to flip the question. So instead of what should be transparent, what should not be transparent? What confidentiality -- what information must remain confidential? And let's think about it from the SIP perspective, especially as we consider doing a WebEx of the operating committee meeting.

But so, if I could go back to Kevin and Jeff and think about what issues are just critical that they are -- they remain non-public --

MS. HINMON: Mark, can I jump in real quick?

MR. DONOHUE: You can.

MS. HINMON: I just wanted to jump in front of Tyler first. But more than anything, going back to the WebEx -- and I really appreciate that NYSE has said, "Hey, let's put everything out in WebEx," and that you're holding hands with NYSE on that one, but I think that if we do go to -- besides beyond mind-numbingly bored during the time that the WebEx is cast, I think that if we do go to WebExing the sessions, I really believe that it will stem a lot of productivity in the meetings. I think people will be less incentivized to speak, I think, public forums -- maybe including yourselves.

And I think that's very important, that maybe an alternative to WebEx would be a release of the

minutes, rather than the current watered-down version and the summary that's there. Just a thought.

MR. CARRAI: I tend to agree with you. I think, again, sort of my thoughts on making sure that there is free and open discussion, that it's confidential among the entire community, including the advisors, will give everyone a feeling of comfort that they can speak openly and freely and, again, collaborate on what's best, what's best for the SIP.

MR. DONOHUE: So why don't we continue on this thread, just for a minute, and we'll go back to my earlier question.

So WebEx -- so in helping transparency, WebEx versus increased detail in minutes, as opposed to summaries, what's the panel's thoughts?

MR. DAVIS: You know, from my perspective, I think that the number of items that are in the executive sessions where, you know, a lot of this mistrust has been born, has been limited to legal actions, and has been limited to, you know, collection actions or disputes that involve specific firms.

And, you know, so at least as far as the executive sessions go, I think if we can work out a way to keep those kinds of discussions confidential, everything else has been in the general sessions.

And I think we're agnostic between detailed minutes and the recordings. You know, I agree with Kevin, whatever promotes the most, you know, free discussion and will make the advisors and the industry trust what is happening there a little bit more.

MR. DONOHUE: Tyler?

MR. GELLASCH: I don't think any of it matters. Frankly, I think it's a better view at a train wreck that's already happened. I don't really care about the outcome. So whether or not I get to read about it or whether or not I get to watch it in a slightly more -- I'll call it held-back version of folks who may feel less comfortable opening up on a WebEx, or they may be more comfortable with a -- being typed up and polished minutes, I think the discussion of more thorough and thoughtful minutes is always a useful one. Just having been a lawyer long enough, I've seen that minutes that maybe start very good have a tendency to get diluted over time, anyways.

But again, I think until you focus on the fundamental structure of who has rights to vote, what those rights are, I don't necessarily think transparency into it.

And go to the point of having a single advisor, or having a single vote here, I think the point was

raised several times earlier. Just being outvoted and losing doesn't really change the outcomes.

So, you know, I would just offer as one of the very few people who would probably watch the WebEx and read the minutes, if there is both, I'd love to. I would just say I don't think that actually fundamentally changes any of the issues we're talking about.

MR. DONOHUE: So let's go back to my prior question. And maybe, Jeff, you may have already answered it. But what information about SIP processing, about SIP systems, all this stuff, what must remain confidential?

MR. DAVIS: I think I did, you know, answer that. I think it is very, very limited to, you know, what is necessary to protect the legal privileges, what is necessary to protect some of the firms', you know, individual rights, you know, proprietary rights or privacy rights, however you think about them.

You know, if I could just, you know, revisit the earlier point about full transparency to the regulators, I -- you know, I think we would invite, you know, some inquiry, you know, by the regulators into, you know, costs that you are interested in knowing. We are very, very open to that. You know, I think it is just a really, really complicated thing, when you go down the path towards rate-making.

And I'm sorry, you know, you can't have government-set cost formulas without, you know, government intrusion and rate-making. You can't have, you know, a cost-based system without rate-making. And rate-making involves really serious -- I think Tyler said it best, you know. You need the economists, you need all sorts of expertise to do that. And I think it is, you know, a complex process.

And I think at the end of the day we would all be better off just having some guidance about what -- you know, what is the real purpose of the SIP? What is the purpose of the revenue from the SIP? You know, what are the logical and proper uses for the revenue for the SIP? And then we can talk about whether, you know, the revenues are, you know, reasonably tied to that or being used properly for that. And that would be, you know, a path to moving the conversation forward.

MR. GELLASCH: I actually want to touch on something you mentioned earlier about the uses of SIP revenues. I will encourage you to -- our comment letter, it's 208 pages. And I believe it is attachment 1, which begins on page 43. And it is the -- it was the filing we submitted for this roundtable. And it is the original CTA plan.

And one of the things you will find in that --

and, by the way, it's not -- it wasn't available online anywhere, we had to go through offsite storage to dig it out -- but it's actually not true that the SIP was originally envisioned as a way to compensate for regulatory purposes or for trading purposes at all. It was never mentioned in the creation of the SIP, never mentioned in any of the several speeches in 1972, when the SIP idea was originally thought of. It was not mentioned in 1974, when it was originally constructed, much less 1975, in the Act. In fact, if you read the original plan, it -- the whole purpose was, in fact, to provide real-time essential data.

So I just want to go back and say you talked about the purpose of the SIP being to use those revenues for other purposes. No, no, no, no, no, not originally. And there has subsequently been a discussion by some staff to say, hey, we'll -- those extra profits -- there was a concern in 1999, and I'm sure that's what you were referencing, that said, hey, in 1999 there was a concern that if you run the SIPs at cost, the exchange, who are now going to be for-profit, will all of the sudden have concerns with how are they going to fund their regulatory oversight functions. That's one paragraph, and I do appreciate that paragraph, and good of you to find it, but that was in 1999, not 1972, '74, or '75.

I'll also point out that doesn't mean that we can't agree that that may be something that's worthwhile to have. I think that that's also a separate discussion that this Commission would be worthy of engaging in, is what's the appropriate regulatory function.

I also want to point out to something you mentioned a little bit ago, which was the SEC and the immediately effective rule filing. So in 2010 I actually had the unlucky misfortunate of working in the Senate staff and working on the Dodd Frank Act, and, frankly, being involved in this provision.

And one of the things I would say is it deliberately did not -- and, in fact, was contemplated to but did not relieve the Commission of the burden to review and pass judgement on regulatory filings. The concept of immediately effective did not say that the Commission is now relieved and, in fact, expressly does not relieve the Commission of the burden of finding that these things are compliant with the Exchange Act, including the discriminatory and undue burden on competition.

So I just want to clarify a couple of things you mentioned earlier. I appreciate that. I'll let it go.

Oh, one last part, sorry. Justification. We

mentioned that things have to be justified, and I agree that the filings do have to be justified. I'll ask you a question, because it isn't your exchange. So bear with me for a moment, and I'll ask Kevin, as well.

Outside of the SIP, if we were talking about exchange filings, and we were talking about the reasonability -- and let's talk about the prop side for a minute, and maybe some connectivity filings -- what would be the rational justification, a pro-market justification, or a pro-competitive justification, a non-discriminatory justification for a fee for connectivity for the exact same connectivity offering to go from 2,500 to 4, to 6, to 7, to 7,500?

And if so, what would you want to know? What would be the information you think the Commission should have to evaluate that as being a competitive -- what would be the information you think the Commission should have at its disposal to understand that that's compliant with the Exchange Act?

MR. CARRAI: So let me first go back to your comments about filing the -- by the SEC. But so the SEC did, in its Reg NMS ruling, make a statement that I think is pretty important, and I'm going to mention it and sort of paraphrase: "Yet the entire financial burden of collecting and producing market data is born by the

individual markets, not by the networks. If, for example, an SRO system breaks down on a high-volume trading day, and it can no longer provide its data to the networks, investors would suffer the consequences of a defective data stream, regardless of whether the networks were able to continue operating."

Also, it said, "We must maintain high standards of SRO performance. Without the data they produce, it would be worth very little."

So this is coming from Reg NMS, so that means our costs are used to create a quality data stream that goes to the SIP in order for our investors to have the best prices and best quotes possible.

So let me then go -- let me talk, then, for a second about fee filings, right? So let's talk about a connectivity fee, physical port fee. So right now we charge $2,500 for a 1 gig physical port connection, $7,500 for a 10 gig. That gives you the ability to access seven of our exchanges, okay? That's seven exchanges with one port. So obviously, there is a lot of value there for you to be able to gain by using that one port to access seven exchanges.

I don't want to use that port. What am I going to do? Well, you have an extranet provider. Oh, well, that provider is very slow. But you know what? The

extranet providers have gotten a lot faster because they realize that they've had to compete.

Number two, you can use what we call a managed service provider. This is an organization -- and Jarrod knows, because he's one of them, Jarrod Yuster -- this is an organization that supports customers in the facility, just a cross-connect, and they can access the market. They can -- yes, they have to pay the 2,500 or 7,500, but they can support multiple customers over that same circuit.

Smart order router. I don't even have to use that. I can get a very fast smart order router and route my orders through the exchange.

So you know what? There are multiple alternatives to this physical connection. And to say that they have to buy it is absolutely wrong.

MR. CONTI: That's still, though, a value-based model and not a cost-based model. What does it cost you to maintain that one port, because you're selling that port to multitudes of people? So we're just looking for some transparency to get closer to a cost-based model.

The reason we want to do that is it will -- that, plus full transparency to the SEC, once we get to a baseline of rationalized, justified fees, that's when we could move forward. And they should be cost-based for

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the dissemination of the market data.

MR. CARRAI: As the happy Chris and the angry Chris both said, you know, the -- look, the cost of a port is not really just the cost of a port, right? You're talking about the entire infrastructure and the entire capacity --

MR. CONTI: So show all of it. So let's see that whole stream.

MR. CARRAI: Okay, all right. So the one thing I would say is that, as everyone knows, we're operating in a highly competitive marketplace, multiple exchanges competing together. And that means that we've got infrastructure that's proprietary and confidential, and then certainly certain public disclosures, I would think, would cause a concern from a security perspective, just because we want to make sure that we are operating within the national market system appropriately, and not potentially or negatively affecting our customers.

We would be open to looking at providing confidential information to the SEC, based on the request, but we are not open to publicly disclosing, you know, our proprietary information, everything about -- everything that's -- what we consider to be confidential about our infrastructure.

MR. GELLASCH: Then how can we evaluate it and

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determine it and make comments?

MR. CARRAI: It is the SEC's obligation to be able to take in that data and evaluate it to determine whether or not they believe that it's appropriate. So it's the SEC's obligation.

MR. GELLASCH: So --

MR. DONOHUE: Let me give Rich an opportunity --

MR. STEINER: Can I --

MR. DONOHUE: He's been down in the corner --

MR. STEINER: I can appreciate that it's complicated. I think everybody in here can. We can also appreciate the legalese and the technical nomenclature. But in laymen's terms, if anybody is still actually watching us at 4:00 p.m. on a Friday, maybe someone can touch on some of these things.

As far as market data being competitive, your clients have been here for two days, traveled from where they do their business down to Washington to talk about that. And it seems to me that we feel, collectively, that market data isn't competitive. No one here, though, is suggesting government rate-making. Rather, we want to better understand how the fees being charged are reasonable and non-discriminatory.

Our clients demand an exceptional amount of

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detail and transparency about our trading platform and how it operates. But when we go downstream, it is quite challenging, indeed.

So if we maintain the status quo, how do you propose member firms like ours, operating on behalf of institutional and Main Street investors, get a better understanding of how market data products are being developed, and how the fees are justified?

MR. DONOHUE: I don't think that was a question for me.

(Laughter.)

MR. STEINER: It wasn't.

MR. DONOHUE: Do either -- anybody want to respond on the panel?

(No response.)

MR. DONOHUE: So let me take this and ask a different question, slightly different question.

MR. REDFEARN: I want to see if we can get an answer to that one. I mean does anybody have -- because we actually have a similar challenge, and I'm hearing a little bit about the -- you know, the -- more information could potentially be provided to us, which I think would be helpful. But I am wondering if you have an answer to that.

MR. STEINER: Thanks, Brett. Real quick, I

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mean, that's kind of what I'm getting at.

I'm sensitive -- and Mark, you asked the question before I did, but I had that down here -- I'm trying to understand what could be so sensitive regarding how the market data is developed and processed that could be so incredibly important and proprietary, no less in a system that has, effectively, no competition, like the SIPs, that the regulators can see it, but folks like us can't. And I don't know how, if -- in the absence of that, we can say this is reasonable and justified.

And at the end of the day you run into a couple of problems. One, our platform, when we spend the millions of dollars we do on market data, has less to invest in other things that could actually help our clients. And two, as Joe Wald said and many other firms who are not here -- feel that it's an incredibly high barrier to entry. And so you get less competitive, to which Melissa and I were discussing.

I don't know if, Melissa, you want to touch on that a little bit, but how that affects, potentially, the wider ecosystem.

MS. HINMON: Oh, are you referring to small or mid-tier brokers and the ability for them not to compete in the marketplace with the bigger people? Yeah, that came up a couple times. I think Matt maybe brought it up and Simon and a couple other people and Joe Wald. His product's been pretty good for that group of brokers.

But one thing that has to be -- if the cost of data is so expensive, and as you slide down the scale in the size of a broker-dealer, often times smaller brokers, mid-tier brokers, they have a special sweet spot in small cap and micro-cap stocks through various relationships with them.

For active managers who are in the space of micro-cap and small cap stocks, they are a really good source of liquidity, amongst other things. And I fear that if it becomes too expensive for these smaller brokers to participate on a level footing in the marketplace, that we're going to lose that ability for capital formation for smaller companies. And investors, the asset managers, the asset owners themselves won't have an opportunity to invest in those companies.

MR. DAVIS: If I could --

MR. DONOHUE: I'm not sure exactly where we are in the conversation between SIP and prop, but we have blown through.

MR. DAVIS: Yes. Yes, we have. So if I could just make one more point to follow up on Kevin's about the SIP, and then maybe take a shot at some of these questions about prop data, we mentioned earlier on one of

the panels that we feel like there is a pro-competitive use of the SIP revenues, right, in addition to paying for the administration and the technology and supporting the regulatory function needed to generate, you know, high-quality quotes that make up the SIP feeds.

There is also a pro-competitive use of the funds. And there is actually a couple of them, right? One is it promotes entry by new and competing exchanges. I think the number came out before that in their first year of operation IEX gathered $9 million of SIP revenue. And you know, we compete hard against them, and the reason that they are -- you know, one of the reasons they're an effective competitor is because they had ready access to the SIP revenue. And that -- there is a long history of that.

I mean, as Tyler said, you know, the -- since Reg ATS was adopted in 1998, there has been sort of a shift, you know, in the competitive environment. And basically, what Reg ATS said was, you know, all ATSs are essentially, effectively, exchanges, but they're exempt from some of the requirements, like registration. But they can choose to operate as, you know, ATSs with broker-dealers, or as exchanges, right?

So in the 20 years since Reg ATS was adopted -- and there have been, you know, 100 or more ATSs -- how

many have actually done that? Four: IEX, ARCA, BATS, and Direct Edge. Four out of over a hundred.

And why is that? I mean if it is so easy to be an exchange, and it is so lucrative to be an exchange, why is it that only four have become exchanges, when they have all had the opportunity to? The reason is it's hard work and it is expensive work. And the SIP revenue, as I've said, is, at least in part, designed to help compensate exchanges for doing that work, in addition to all the other regulatory work that they do.

Secondly -- and you'll see this in our written comments -- the purpose of the SIP revenue, in our view, is to incentivize certain good behaviors for the market. And this, again, comes from Reg NMS, where, you know, for a long time the revenue was allocated according to -- 100 percent according to trades, where they occurred. And then the Commission decided that it wanted to incentivize conduct that created better quotes, better price discovery, and they shifted the formula to 50/50 quotes and trades.

And, you know, so some of that money is used directly that way, to promote quotes that, you know, help form a better BBO and help Main Street investors. But there's other uses for that money, too. You know, and Tom Wittman from NASDAQ mentioned it yesterday, it's in

our written statement. NASDAQ takes 83 percent of the money from its TRF revenue -- and the TRF gets revenue from trades that are reported to the SIP -- we take 83 percent of that revenue and we share it back to the firms that report those trades.

Our fee schedule is fully transparent, it's up on the website. At the highest tier -- and again, we differentiate according to volume -- 98 percent of the revenue attributable to trades that go to the SIP are shared back to the firms.

And, you know, we thought, again, you know, that there is some misperception out there that, you know, we're just raking in all this money. But, you know, over the last five years we did receive $272 million from SIP revenue attributable to the TRF, but we shared $232 million of that back to the firms. So NASDAQ kept 40 and the firms got 232.

And you know, I think we wonder that when, you know, firms are talking to their institutions, and they're talking about TCA analysis, are they sharing the fact that this revenue goes back to them, or are they just sharing the fact they pay X amount for prop data, they pay X amount for -- or X amount for SIP data? Do they also mention that they're getting, you know, $232 million back from the trades that they report?

MR. DONOHUE: So I want to give Anthony a chance to speak, but I want to follow up on that one point, because that's additional transparency that we didn't have before yesterday. And I think it's very helpful, as we think through our market structure and how things work.

How do we figure out that that TRF money that you're earning is a fair and reasonable amount of money for the fee? If you're changing the fee, how do you figure that out? What do we need in the -- what transparency do we need in a fee filing? What transparency must be public? And, now that we've teed this up, what transparency should we have so that we can evaluate that issue?

MR. DAVIS: Yeah, and I think you have --

MR. REDFEARN: Were we turning it over to Anthony on that --

MR. DONOHUE: I was going to get right --

MR. DAVIS: Sorry.

MR. MASSO: No worries, no worries. So I just wanted to quickly follow up on Melissa's point about the medium and small-sized brokers. I think the same can be said for technology companies, as well. As market data has increased, you know, looking over the past five years, I just see many, many problems that these firms

have.

You know, there are solutions, I think, to those problems. But you know, these reg tech companies are not trading with that data. They're using it for other purposes. And no one is asking the questions. You know, the exchanges are not asking us the questions, okay, what are you using this data for. Arguably, you know, compliance systems are -- you know, we should want to promote that policy, we should want many firms to be able to use it, small and large. And, you know, the increase in market data has, you know, really increased the costs associated with compliance.

And, you know, if your model of -- you know, is really heavy into analyzing data, if that's what your compliance system is doing, the cost to -- you know, it's such a bar to -- a barrier to basically get into that, because there's no way to ease into it. The minute you start taking that data, they're charging you 100 percent.

You know, maybe there is some things we can do. Like, we talked -- like Jeff was talking about differentiation. Maybe we can look at those. Like, you know, why are these companies using the data? If it's compliance-related or if it's -- you know, maybe development is going on. Maybe there is something that the exchanges can do. Because I feel like, you know,

it's only in the exchange's interest to, you know, kind of give a little bit of an on-ramp to a company that will ultimately end up being their customer.

So I think that's a reasonable solution to a problem of increasing data. But, you know, you have to look at why the companies are using --

MR. DAVIS: That makes a lot of sense to me, Anthony, I have to say, a pro-regulatory policy like that.

MR. GELLASCH: Yeah -- no, that's all right. The same point on small brokers. One of the things I want to weave together, two points that were just made about something that Jeff had mentioned as well as Melissa, and now Anthony has sort of launched into is the competitiveness of smaller brokers. And, you know, we clearly need the diversity of that, and the buy side is very committed to that.

But when we think about market data, market data is a cost that essentially is a tax of having to do business. And we're now hearing that there is a competitive aspect to that. So the tax revenues that are collected from market data may be redistributed elsewhere.

Okay. Well, if you're a small broker, you're going to be paying that tax. So that's a competitive

burden on you that may be disproportionately falling on you, as opposed to a larger firm. Now you go to trade. Well, the revenues from the market data may be subsidizing the trading. Well, if you're a smaller broker, you probably don't have nearly as good a pricing tier.

So now you're getting hit twice. You're having a disproportionately harder -- higher tax on you, on a -- per basis for -- on the market data. At the same time, the revenues that are promoting trading are more likely to be going to your larger competitors with significantly larger volumes. So you have two interconnected things. One, the market data, but, two, the pricing tier on the other end, both of which are hurting the smaller broker.

MR. CARRAI: I just want to mention one thing. So for Cboe, you know, we had, just as other exchanges have, non-display fees. When we introduced our non-display fees, the one thing that we were very concerned about was the small broker-dealer, particularly those who are managed through managed service providers. So we specifically exempted those broker-dealers from receiving a non-display fee. Again, because we knew that they -- that would prevent them from getting our data and, frankly, they would choose not to get our data.

So we specifically exempted them because we knew that it would be too much for them to spend. So we -- you know, we do take a look at who it is that would be getting -- taking our data, and whether or not it -- the -- we believe the price would be too high for them to accept, and therefore not take it all.

MR. DONOHUE: So let me go back to the question I just asked, and I'll re-frame it slightly.

The next SIP fee filing. So it could go up, it could go down. The same evaluation from our side has got to happen. What do we need in that fee filing? And what do you need in that fee filing in order to be able to effectively comment on it?

MR. DAVIS: There's been a theme throughout the last couple days that I think this sort of touches on. As a regulated entity, we would love more clarity around that, right? I hate to flip it back, but I will say --

PARTICIPANT: Well done, well done.

MR. DAVIS: On best execution --

(Laughter.)

MR. DAVIS: -- on what is required for costs and filings, we would love to know that, right? I think it would help a lot of people in this room.

PARTICIPANT: I have suggestions.

MR. DAVIS: If the Commission --

PARTICIPANT: Absolutely, and part of it is --

MR. DAVIS: Sorry, can I --

PARTICIPANT: Sure, sorry.

MR. DAVIS: It would help a lot of people in this room -- exchanges, institutions, brokers, non-profits -- for the Commission to give us clear guidance on what best execution means to them. Plain and simple. Prop feeds, SIP feeds, something else? We think there is a lot of uncertainty and a lot of misinformation out there. We would all benefit from more clarity.

On the SIP filing from not too long ago that was abrogated, my understanding is we asked for some clear and written guidance on what is required for SIP filings, and we really -- I think we really mean it. If you tell us what is required or, you know, what you would like, we will put it in there, whether it's public or confidential. You know, whether it's for you or for the whole industry. You know, we can talk about it.

But in a lot of ways, as a regulated entity, we can relate to what a lot of people have been saying the last two days, that more clarity would definitely help.

MR. DONOHUE: So I'll just return it right back to you. What do you think we should have, though? I think we can come back to you at some point, but I think that's the real question.

MR. GELLASCH: So --

MR. REDFEARN: There is -- something probably needs to have some explanatory power to it. Let's start with that.

MR. GELLASCH: So we offered the -- an objection to that abrogated filing. And so I feel somewhat comfortable in having gone through this process. And essentially, what we did, and what I think the Commission would be wise to do, and what I hope we could work together on ahead is looking at the Exchange Act and saying, "Here is each of these elements," as an economist would do, and say, "Look, what are the -- what's the type of information that we would need to know whether or not this filing is discriminatory?"

Again, I go back to I don't see how you do that without identifying the types of firms that get it, the types of firms that don't, and what it is. I -- so for every single thing, for competition, I don't understand how you could effectively evaluate or the Commission could effectively evaluate whether or not something is an undue burden on competition without seeing who gets it, who doesn't, and what the value of it is, vis-a-vis themselves, separately from vis-a-vis SIP versus the prop feeds of any individual exchange or exchange family.

MR. STEINER: I would just say that if we had our way, we would -- you know, we would like to see a

disclosure of all revenues and costs, itemized by product and service, associated with the collection and dissemination of market data, as well as the number of clients that use these products. That would be helpful to us, and our clients.

MR. CONTI: Yeah, a granular -- a more granular view. I appreciate you -- that -- you being transparent, but I think it's not transparent at the granular level that is now needed to make the right decisions.

MR. CARRAI: This is -- and here is the problem. The problem is that then you get down to the level of identifying which firms have how many users, and that's not something that, you know, I don't think that we would feel is something that we should disseminate publicly.

MR. STEINER: Can't we obfuscate that? I mean we have --

MR. CARRAI: You know what? I don't --

MR. GELLASCH: To be clear, if there is something that's only used by one firm, I actually think that is relevant for the discussion of whether or not it's a fair or non-discriminatory or anti-competitive.

MR. CONTI: And again, that's something that could be just given to the SEC, and not made public. But giving granular transparency by product --

MR. CARRAI: I don't have a problem with private disclosure to the SEC. I do have a problem with it being public disclosure that everyone then sees and, you know, could create some unintended consequences.

Because at the end of the day -- so we -- we've all talked about the individual investor in both of these days. You know, we want to create a price that promotes the most use from the individual investor, the retail investor. And that should be our objective, you know? And so our pricing should reflect that. And it -- in some -- you know, if the cap -- if that's what we need in order to be able to do that, then we should be able to do that.

Again, I don't have a problem with providing confidential information, but as long as we all understand that's what the objective is.

MR. GELLASCH: How many economists is the SEC going to hire in order to evaluate the confidential information? Because the entire rest of the world would be unable to view that information.

MR. REDFEARN: We have a lot of economists here. There's quite a few. I mean they're working on a lot of different things.

MR. GELLASCH: I appreciate, Edwin, you and a few others, but I would encourage -- I would question

whether or not the staff is appropriately equipped to --

MR. REDFEARN: I mean I think that -- I feel like this is a productive discussion, and I like the direction it's moving in, because we are talking about bringing more information to the table. And it could be on a specific thing, and it could be in a big-picture way. But more information and more detail certainly helps us to do what we need to do. I think that we might have less detail than, you know, some might imagine in certain circumstances. And so more would be helpful.

I think we have -- you know, we have bigger-picture things we need to look at in terms of the sort of the pool, and how it's evolved over time, because there's a lot of misunderstanding about, you know, was it for -- I mean I remember when there was -- it's paying for regulation, that's what it's for. Is it paying for other things? I didn't realize that in, you know, in 1934 or whatever -- I didn't do -- maybe haven't read your page -- what was that, again, in your --

MR. GELLASCH: Page 43, 1974, first version --

MR. REDFEARN: I got to, like, 41, I think.

(Laughter.)

MR. REDFEARN: But, you know, I think that that would be probably worth knowing. We have -- you know, I think when non-display fee filings initially came in,

there was an articulation that it would be revenue-neutral, right? And I think, you know, it's probably worth drilling down on that and how that has worked a little bit, historically.

I think there is a question about if competing products were created that actually took users away from the SIP, so it didn't compete and it lost users, there is a question of, if you lose users, do you lose revenue or do you find other ways of allocating it to other people? I think that's probably a relevant question that we should ask, as well, when we think about, you know, how things have evolved a little bit.

So I think there is a lot of things that we need to look at, but the more information that we have, and as we're -- obviously, we're very serious about sort of drilling down into these questions. You know, we look forward to working with all of you to sort of try to figure that out better.

MR. DONOHUE: If I could just ask Kevin a follow-up question on the -- the information that you think is appropriate for the Commission only versus the public, is that really limited just to firm-identifying information?

MR. CARRAI: Yeah, it would be firm-identifying information and the quantities, because --

MR. DONOHUE: But as --

MR. CARRAI: -- obviously, then that relates to how much they pay into the SIP on -- and again, on a per-user basis.

And, you know, so the thing that you want to make sure -- this is where it becomes very difficult, right? You could say, you know, this is a utility, there shouldn't be -- no cap, right? But if you have a small number of firms that represent hundreds of thousands of individual investors, do you want to go ahead and create an incentive for them to not give them the consolidated data? I don't think we want to.

So, you know, having that information will help you better understand sort of the rationale behind the pricing, and it does have to be confidential, I think.

MR. SHILLMAN: But the more granular information by product, both cost and revenues, as long as it doesn't identify the customer, you're good with that being in the filings?

MR. CARRAI: I think so, yes.

MR. SHILLMAN: Okay.

MR. CARRAI: Yeah.

MR. DONOHUE: So we're almost done here. And I promised myself I would end early. But I was hoping, quite frankly, to have something for the SIP operating committee to do on Monday. We've got plenty to do on Monday, but some directions or suggestions for them to consider. And let's focus on the transparency issue, because that's what the panel is about.

So there is a discussion of full transparency, and there is a discussion of what should remain confidential. Where is the middle ground that the operating committee should start considering on Monday?

MR. CONTI: So I think that's something we need to discuss and get to.

You know, just to echo some -- and to tie that into some sentiments that were echoed by Kevin before, and Emily, you know, within the CTA UTP operating committee, we have carved out in the last year and a half or so some subcommittees, the distributed SIP subcommittee. Kevin and I are on the market data administration subcommittee. I think that's something we would take back to a subcommittee and discuss, because these subcommittees actually have been very informal, very collaborative, very open, very productive.

As Kevin said before, I think we're actually very proud of it. I think this construct of the subcommittees and talking these things through and having them ready for the quarterly meetings for a vote, and having it all discussed through, hashed out, and ready to

bring to the committee is a good construct. And I think it works.

And, you know, I want everybody to know that, you know, there seems to be a lot of contention and a lot of combativeness, but there really is a lot of working together with the exchanges and the advisors. The advisors, we are plugged into the consumer constituency groups, very much so. So we're acting with a lot of input from them.

And I think the way forward, even on something like that, would be us -- without revealing the confidential information -- discussing what should be public, what shouldn't be public. I think it could be handled in those forums.

MR. DONOHUE: A transparency subcommittee?

MR. CONTI: Yeah, possibly we could call it that, or --

MR. DONOHUE: Got to come up with a name, if it's going to stick.

MR. CONTI: They got to --

MR. DONOHUE: Other thoughts?

MR. DAVIS: Mine are not as directly tied to transparency. I think we have made a few suggestions for moving things forward, you know, in terms of adding a vote for the advisory committee to dispel some of the

mistrust that has existed and maybe grown.

We are holding hands with the NYSE, and suggesting that we WebEx or maybe just cut back to minutes. Again --

PARTICIPANT: CSPAN.

MR. DAVIS: Put it on CSPAN?

So I -- we do -- you know, we do support the subcommittee structure. There's a lot of good work getting done.

But if I could just take a step back, I mean, you know, we have participated actively in the discussions for the last two days. And you know, I think this panel sort of highlights it. There is a lot of consensus that exists in the industry. It is not all just contention.

I think, you know, there is a consensus, you know, as the Chairman said, that we are here to protect Main Street investors, and that, you know, by and large, we're doing that very well.

You know, we've heard a lot of evidence that Main Street investors get the data that they need, that they get it at a low cost, that it is very reliable. And you know, we don't think that there has been any evidence that these issues about transparency or any of the rest has done any harm to Main Street investors. So I think

we are very encouraged by that.

I think -- you know, we have heard, you know, a general consensus that the SIP has, you know, certain value in creating that data. It may not be equal value for everybody.

Some people may need more. But there -- you know, there is some value in terms of having a nationwide standard for what is the price of a stock, and you know, where does that fit into best ex. Maybe people differ a little bit, but really not very much.

We even heard from, you know, Simon at Norges Bank that it is, you know, a standard that is recognized worldwide, recognized and admired. And we have also heard consensus that nobody wants to turn the Commission into a writ-making agency. You know, I think, unfortunately, we think some of the proposals push down the path to that, and, you know, we feel compelled to push back, that that is a failed public policy. It is a really bad idea. It does more harm to consumers than good.

And so, you know, we are reluctant about that. But, you know, we do want to work with the Commission, and we want to work with the committees to do what we can to dispel this mistrust and get some of the information out there that people feel like they need.

So we look forward to being a part of that conversation. We really appreciate the last two days of discussions.

MR. GELLASCH: I echo the appreciation. The only thing I would say is, I think for us going forward, is it would be really helpful for us -- and to echo Jeff's remarks -- for the Commission and perhaps in consultation with many of the folks that have been up here on panels over the last two days, and many in the audience, to try to develop and articulate standards for reviewing the filings.

At the end of the day, these things come into the Commission in 1,500 filings a year. And articulating a standard -- and I don't think the Commission has necessarily always clearly held all of the filings up to the standard of the Exchange Act -- I think it would be really, really valuable to articulate a standard, here is what the Exchange Act requires for each of these elements, and then taking that and applying it so that they know what to do when they're making our filing, we'd have the information we need to comment on it, and you have the information you need to decide it.

MR. REDFEARN: I think that is an apropos way to wrap up. I want to just echo a few of the sentiments that have been made here. And I'm trying to move the mic

around so I can finally look back a little bit at all of you who have taken so much time and committed to being here and sharing your ideas and participating in this discussion with us.

This is an extremely important issue for us. It's something we take very seriously. We dedicated two days to it, as all of you have, and I won't say it could have gone longer, but I feel like we've made a lot of progress, and we intend to really think about these things and to follow up.

I think our theme, again, for today, when we think about policy-making -- not just because it's Friday, but it is TGIF. So we are looking at the area of transparency, governance, infrastructure, and financing. And I think that, you know, as Tyler suggested and others have here, we do intend to take very seriously, as we have in the past, the -- this issue of, you know, fair, reasonable, non-discriminatory, and all of the other things that we have to do under the Act. And so these kind of conversations help us do that, and help us to move the ball forward.

So I just want to thank, again, this panel for a great discussion. Thank you for your openness, for being here, for participating, and also thank all the audience for being here and participating in this event.

So thank you all very much.

(Applause.)

MR. REDFEARN: And I want to say one last thing, sorry.

Commissioner Roisman did make a comment yesterday related to fixed-income markets. Fixed income is an area that we are taking very seriously, as well. We have a FIMSAC committee. For those of you who haven't had enough of us, on Monday we have our fourth FIMSAC meeting from 9:30 to 4:15. And anybody who wants to stay the weekend here in Washington and come to that on Monday, you're welcome to join us for that, as well. So thank you.

(Whereupon, at 4:31 p.m., the roundtable was adjourned.)

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PROOFREADER'S CERTIFICATE

In the Matter of: ROUNDTABLE ON MARKET DATA & MARKET ACCESS

File Number: OS-1026

Date: Friday, October 26, 2018

Location: Washington, D.C.

This is to certify that I, Christine Boyce (the undersigned), do hereby certify that the foregoing transcript is a complete, true and accurate transcription of all matters contained on the recorded proceedings of the investigative testimony.

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I, Kevin Carr, reporter, hereby certify that the foregoing transcript is a complete, true and accurate transcript of the matter indicated, held on __10/26/2018___________, at Washington, D.C., in the matter of:

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