



**CBOE Holdings**  
**Customer Conference Call**  
**Bats EDGX Options Exchange Complex Order Book Launch**  
**Thursday, May 4, 2017**  
**11:30 am – 12:30 pm CT**

**Welcome**

**Hannah Randall, Director, Communications**

Thank you operator. Good morning all and thank you for your time. Presenting today are: Chris Isaacson, Executive Vice President and Chief Information Officer; Andy Lowenthal, Senior Vice President and Head of Global Derivatives, and Kapil Rathi, Senior Vice President, Options Business Development.

Following their prepared remarks, we will hold a Q&A session for customers only.

Joining us for the Q&A will be: Eric Crampton, Senior Vice President and Global Head of Software Engineering; Jeromy Hiserote, Manager of BZX and EDGX Options Trade Desks and Bill Ciabattoni, Director of Product Strategy.

Customers on the phone can queue up for questions by following the operator instructions at the end of today's remarks. If you are online, you may submit a question via the box and "Submit Question" button on the right hand side of your screen.

If you're a journalist or analyst, please reach out to our corporate communications and investor relations teams and they will address any questions you may have separately.

It is worth noting that this call concerns the EDGX Options complex order book only. Those interested in updates on the CFE migration to Bats technology should visit our integration website at [batsintegration.cboe.com](http://batsintegration.cboe.com). For those interested in hearing about our plans for C2, be assured that those details are forthcoming.

I'd also like to point out that this presentation will include the use of several slides, which will be available on our dedicated EDGX Options complex order microsite at [www.bats.com/COB](http://www.bats.com/COB). In addition, the transcript and recording of this call will also be made available on the microsite.

As a preliminary note, and as detailed on slide #3, you should be aware that this presentation contains forward-looking statements which involve some risks and uncertainties. Actual results, dates and functionalities may vary. Please refer to our filings with the SEC for more detailed information about the risks and uncertainties.

Now, I'd like to turn the call over to Chris.

**Chris Isaacson, Chief Information Officer**

Thank you, Hannah, and good morning everyone. Thanks everyone for joining the call. We will start this call on slide #4 with a high level roadmap of our plans to launch a complex order book on our EDGX Options Exchange and provide details about planned key dates and milestones leading up to the production launch.

We will also discuss supported order types and available complex strategies, order entry details and key elements of the matching process. Lastly, we'll highlight complex auctions, market data feeds and importantly, the various risk protections and features available to customers that will allow you to trade with confidence on EDGX Options.

The launch of a complex order book on Bats technology has been a longstanding ambition of ours, and we are excited to couple our designs for this new and innovative functionality with our market-leading technology platform.

Our aim is to launch what will become the world's leading electronic complex order book, and so further augment our already leading position in the U.S. options market. To that end, we believe the EDGX complex order book will include the most comprehensive order handling, risk management and trade-through protections yet.

As ever, we ask you to come to us with your ideas, opinions and feedback throughout this process. I'll now hand over to Andy, who'll discuss what this means for our integration efforts more broadly.

**Andy Lowenthal, Head of Global Derivatives**

Thanks Chris, and thank you all again for joining today's call.

Per slide #5, while today's call concerns the development of a legacy Bats Options market, it has important ramifications for our broader business that we feel are worth sharing.

Perhaps most critically, the underlying principles that underpin complex orders on EDGX will be the foundation for all complex order functionality on the CBOE markets that are migrating to Bats technology. As you know, this will start with CFE on February 25, 2018, but it will also extend to C2 and CBOE.

In effect, this means customers will get a first taste of the new capabilities of the CBOE a mere eight months after the close of our acquisition of Bats.

We feel this focus on delivering new and innovative technology amply demonstrates our commitment to operate one of the foremost derivatives businesses globally, and you can rely on us to maintain this same focus and drive in the years to come.

With that, I'll hand back to Chris, to start detailing this exciting new capability.

**Chris Isaacson, Chief Information Officer**

Thanks Andy. Beginning with slide #6, in terms of planned dates, the first phase of the complex order book will be launched later this year, on October 23, 2017. All initial functionality related to the complex order book launch will go live that day.

Prior to that, there are a number of key dates to note. These timings are subject to regulatory approval.

On May 11 we will make technical specifications available. As with other materials related to the launch of the complex book, these will be available on our dedicated microsite at [www.bats.com/COB](http://www.bats.com/COB).

Beginning August 1<sup>st</sup>, the certification environment will be made available for member testing. EDGX Members will be required to certify before using complex orders on the exchange.

Two weekend tests will follow: the first on September 16<sup>th</sup> and the second on October 21<sup>st</sup>. These are optional, but recommended.

Throughout this process, we will provide regular updates to keep customers informed of any changes or adjustments to our plans. Still, we welcome feedback and strongly encourage you to be in touch with our sales and trade desk teams throughout this process.

Turning to slide #7, as you may already know, our EDGX Options Exchange was the first platform to operate on our newly designed matching engine and BZX Options followed late last year. This new matching engine technology will also power the new complex order book.

The EDGX options complex order book rollout will come in stages. From day one, we will support options-only complex orders and single-sided complex order auctions. After the initial launch planned for October 23<sup>rd</sup>, subject to customer demand, we will

gradually add other capabilities like crossing orders, stock/options orders and implied orders. Further details and the schedule for these future capabilities will be provided in due course as we work through the CBOE/Bats integration.

Slide #8 provides an overview of the different order types that will be supported in the EDGX Options complex order book, as well as who can use them.

These include Day orders, Immediate-or-Cancel orders, Fill-or-Kill orders, Good-Till-Date and Good-Till-Cancelled orders, which will be treated as Day orders. We will also support an Opening-Only order type that will only trade during the open. Unfilled size will be cancelled back to the member after the opening trade.

As for the price on an order, you can indicate a limit net price or mark a complex order as a market order. Market order handling will be discussed in subsequent slides.

Members will have the option to auction their order if they choose, and we'll provide additional details about such auction orders shortly. Members can also indicate that if their order is not traded during the initial auction, the remaining size of the order is cancelled back to them by marking it as Complex Auction only.

Members will also be able to indicate on an order-by-order basis if they are willing to trade their complex orders with regular book orders.

It is worth noting that all complex orders will trade in penny increments regardless of individual series minimum tick size.

Finally, all members can enter all complex order types. We will not be limiting any particular order type to any specific category of customer. For the avoidance of doubt: a complex order can be entered on behalf of a Customer, Firm, Market Maker, JBO, Broker-Dealer, Away Market Maker and Professional Customer.

Turning to slide #9, EDGX Options will support complex strategies up to 12 legs. The maximum and minimum ratio between the largest and the smallest leg must be 3 to 1. All legs must be based on the same underlying symbol and all legs must deliver the same number of shares. For instance: you may enter a complex order in series that are corporate adjusted, provided all legs are delivering the same number of shares.

Now, I'd like to turn it over to Kapil to cover key details and features of our new complex order functionality.

## **Kapil Rathi, Senior Vice President, Options Business Development**

Thanks Chris, and thanks again everyone for joining the call today.

As we detail on slide #10, complex order can be entered two ways via our proprietary BOE interface or FIX, and both options will give customers real time control on what types of instruments can be traded on the exchange.

First, you can enter an order buying or selling a complex strategy as a package. With this option, a complex order almost looks like an order entered for a regular series. A new order is sent as buyer or seller of a complex strategy that is referenced by an exchange provided strategy I.D. If the strategy instrument already exists, members using this mechanism must reference the existing strategy instrument I.D.

If the strategy instrument doesn't exist, members must create a new instrument specifying the series, side and ratio. For capacity reasons, we will limit the number of instruments one member can create and these details will be provided in due course.

Alternately, members may enter a complex order by buying or selling individual legs. This option will be available to FIX users only. The order must include full information for each leg, including series, side and ratio. In this case, the exchange will create a new instrument and disseminate information on the market data feed, which we will talk about shortly. Members using this option do not need to create an instrument or keep track of an existing strategy I.D.

Slide #11 outlines the matching model within the complex order book and between complex and regular book orders. EDGX Options complex matching process will be continuous and complex orders can trade with both the counter side complex orders or with orders on the regular book.

Within the complex order book, resting orders will be traded in a price/time allocation method. If both regular and complex books are at the same price, the trade priority order will be as follows:

- Priority customer orders resting on the regular book will trade first;
- All complex orders will trade second;
- All non-customer orders on the regular book will be matched last.

When legging into the regular book, resting regular orders will trade with current customer priority/ pro-rata model on EDGX Options.

A resting complex order will trade as soon as a marketable counter side order arrives on the complex book, or if a new order on the regular book has made the complex order

'leggable'. As a result of this advanced Bats technology, we are happy to share that the legging process will be fully deterministic and there is no best effort or delay involved.

Turning to slide #12, we will now discuss Complex Order Auctions (COA).

Members looking for liquidity for their orders, or for price improvement, can choose to auction their complex orders for 50 milliseconds. You will have full control of whether you want to auction orders by controlling the setting at the port level or by including instructions on the individual orders.

COA orders will be disseminated on auction feed only, the specifics of which we'll discuss in a later slide. Auction messages will indicate price, size, side, capacity (customer or non-customer) and the auction I.D. which responders must include in their responses. As there may be multiple auctions occurring in parallel on either side of a complex order, responses will only trade against the orders with a specific auction I.D.

Unexecuted portions of the responses will be cancelled back and unexecuted portions of the auction order will either be placed on the complex order book or cancelled back if marked as IOC, FOK or Complex Auction Only.

At the end of the auction period, an auction order can trade with counter side complex orders, responses or individual legs, as outlined in our discussion of the complex book allocation model described earlier.

With the launch of the complex order book, we will introduce three new market data feeds, as detailed here on slide #13.

A Top of the Book feed will show aggregated size on the bid and ask side of a complex order book at the top price level.

The second feed, Complex Depth Feed, will be similar to our current depth of the book feed showing order by order information as they are entered, cancelled or traded.

The third feed, Complex Auction Feed, will show auction messages only. Members who are only interested in listening to auction messages can choose to subscribe to this feed only. Complex auctions will only be available on this feed and in time, we plan to use this auction feed for future price improvement and crossing mechanisms.

It is important to note that trades within the complex order book will be reported on complex data feeds, while corresponding individual leg trades will be reported on the regular data feeds. All three data feeds will also include the strategy definitions as they

are created. Members will also have ability to request all strategy definitions on demand.

As I indicated earlier, each of these data feeds will also show whether the resting or auctioned complex order was entered on behalf of a priority customer or non-customer. Please note that if the order was entered for a non-customer, we will not disclose whether that non-customer is a market maker or professional or some other capacity.

Slide #14 is an opportunity to talk about a functionality that is as critical and important to us as it is to you: risk protections. We are pleased to say that the EDGX Options complex order book will have multiple risk protections built in.

Let's start with NBBO Protections. We understand that when it comes to NBBO protection, one size does not fit all. There are customers who would never want their orders to trade outside of the NBBO, while there are other customers, such as large institutions trading large blocks, who are willing to trade somewhat outside the NBBO -- but not too far. To that end, I am very happy to announce that EDGX Options will offer the most flexible solution to NBBO protections of complex orders.

On EDGX Options, you will be able to specify your appetite to trade outside the NBBO on an order-by-order basis by adding a buffer. If you don't want to control this option on an order-by-order basis, you can either rely on the default limit set by the exchange -- which we'll announce in due course - or you can control it directly at the port level. Please note that a zero buffer will mean a complex order should not trade outside the synthetic NBBO calculated from prices of individual legs from OPRA at the time of order entry.

Upon entry, the complex order price will be capped at the Synthetic NBBO (+/- buffer) level. Market data feeds will only show the price at which a complex order is capped. If a capped order has not traded within 2 seconds, and cannot book at its designated limit price, the order will be cancelled back to the customer. We believe this is the most holistic complex options risk solution any exchange has provided and we hope you take advantage of it.

Fat finger protections will perform in the same way they do for regular orders today. There will be an exchange defined -- or member defined port setting -- for maximum order size.

Another area where we have attempted to excel is using intrinsic value of various complex strategies for risk protections.

The minimum price for all debit strategies must be zero (minus a buffer). The maximum price limits for Verticals, Butterfly and Box Spreads must be more than their intrinsic value. For example, a five dollar spread can only trade up to five dollars. The market orders on or above pre-defined strategies will be capped at the minimum or maximum price for the strategy or synthetic NBBO (+/- Buffer).

It is also important to note that if a market order trades at the credit price, it will not trade afterwards at the debit price. And finally, if all legs are buying or selling, the minimum price must be sum of ratio x \$0.01 for each leg. I strongly recommend you reach out to your account manager or the CBOE Bats Trade Desk to obtain further details about these protections.

Slide #15 details our approach to quote risk management (or QRM) that tracks risk threshold for resting orders, new pegging logic and matching trade preventions.

QRM tracks risk thresholds for resting orders and complex trades will be included in these calculations. To that end, if a trade in our regular book or complex book triggers a risk control, all orders from the regular and complex book will be removed.

To ensure market makers resting on the regular order books do not breach their risk threshold because of a multi-leg order legging into their resting orders, we will limit complex order legging.

- Complex Orders with greater than 4 legs will not leg in.
- Complex Orders with 3 or 4 legs when all legs are buying or selling will not leg in
- Complex Orders with 2 legs where both legs are either buying or selling calls or puts will not leg in unless the order is entered on behalf of a priority customer and goes through an auction.

Orders that cannot leg in will be pegged to counter side synthetic BBO and updated on market data feeds as the synthetic BBO moves. We believe the concept of pegging a complex order is something new, and we are proud to bring this feature to the marketplace. With pegging, the complex orders will only be displayed at their executable prices. You will never see orders priced at non-tradable prices.

When it comes to Match Trade Prevention, the following options will be supported:

- Cancel Newest – in which the order with the later timestamp will be cancelled;
- Cancel Oldest – in which the order with the earlier timestamp will be cancelled;
- Cancel Both – in which both orders are cancelled immediately.

If complex orders are about to leg into the regular book and match trade prevention is required, the complex order will always be cancelled. This is regardless of the indicated MTP option on either the complex or regular order.

As with how MTP works on our current regular book, MTP can be specified at the EFID level, firm level or Group ID level.

With that, I'll hand it back to Chris to wrap up the call.

**Chris Isaacson, Chief Information Officer**

Wrapping up, we understand that we have shared lots of details with you today – some of which have been very granular – and we thank you for your time and attention as we outlined these on slide #16.

By way of a quick reminder on the planned key dates, which I'd note again are subject to regulatory approval:

On May 11, technical specifications will be made available.

From August 1, you'll be able to test and certify in our EDGX Options certification environment.

Optional weekend tests will follow on September 16 and October 21.

And the first complex functionality will go live on October 23.

Finally, to make sure you have all the information you need, we strongly recommend you keep an eye on our dedicated microsite at [www.bats.com/COB](http://www.bats.com/COB). As you might expect, we will also be forthcoming with any substantive updates you need to know.

With that let me hand it over back to the Operator for any questions.

**Closing**

**Chris Isaacson, Chief Information Officer**

Thank you operator, and thank you all once again for dialing into today's call. As with everything we do, your continued input, ideas and guidance are critical and we are grateful to enjoy such thoughtful and additive conversations with you all. Our phone lines and emails remain open for you throughout this process. With that, have a great afternoon.

**-END-**

### **Cautionary Statements Regarding Forward-Looking Information**

*This communication contains forward-looking statements within the meaning of the Private Securities Litigation Reform Act of 1995 that involve a number of risks and uncertainties. You can identify these statements by forward-looking words such as “may,” “might,” “should,” “expect,” “plan,” “anticipate,” “believe,” “estimate,” “predict,” “potential” or “continue,” and the negative of these terms and other comparable terminology. All statements that reflect our expectations, assumptions or projections about the future other than statements of historical fact are forward-looking statements. These forward-looking statements, which are subject to known and unknown risks, uncertainties and assumptions about us, may include projections of our future financial performance based on our growth strategies and anticipated trends in our business. These statements are only predictions based on our current expectations and projections about future events. There are important factors that could cause our actual results, level of activity, performance or achievements to differ materially from those expressed or implied by the forward-looking statements.*

*We operate in a very competitive and rapidly changing environment. New risks and uncertainties emerge from time to time, and it is not possible to predict all risks and uncertainties, nor can we assess the impact of all factors on our business or the extent to which any factor, or combination of factors, may cause actual results to differ materially from those contained in any forward-looking statements.*

*Some factors that could cause actual results to differ include: the loss of our right to exclusively list and trade certain index options and futures products; economic, political and market conditions; compliance with legal and regulatory obligations; increasing price competition in our industry; decreases in trading volumes or a shift in the mix of products traded on our exchanges; legislative or regulatory changes; increasing competition by foreign and domestic entities; our dependence on third party service providers; our index providers' ability to maintain the quality and integrity of their indexes and to perform under our agreements; our ability to operate our business without violating the intellectual property rights of others and the costs associated with protecting our intellectual property rights; our ability to accommodate trading volume and transaction traffic, including significant increases, without failure or degradation of performance of our systems; our ability to protect our systems and communication networks from security risks, including cyber-attacks; the accuracy of our estimates and expectations; our ability to maintain access fee revenues; our ability to meet our compliance obligations, including managing potential conflicts between our regulatory responsibilities and our for-profit status; the ability of our compliance and risk management methods to effectively monitor and manage our risks; our ability to attract and retain skilled management and other personnel; our ability to manage our growth and strategic acquisitions or alliances effectively; restrictions imposed by our debt obligations; unanticipated difficulties or expenditures relating to the recently-completed acquisition of Bats Global Markets, Inc., including, without limitation, difficulties that result in the failure to realize expected synergies, efficiencies and cost savings from the acquisition within the expected time period (if at all), whether in connection with integration, combining trading platforms, broadening distribution of product offerings or otherwise; our ability to maintain an investment grade credit rating; disruptions of our current plans, operations and relationships with market participants caused by the Bats acquisition; and potential difficulties in our ability to retain employees as a result of the Bats acquisition. More detailed information about factors that may affect our actual results to differ may be found in our filings with the SEC, including in our Annual Report on Form 10-K for the year ended December 31, 2016 and other filings made from time to time with the SEC.*

*We do not undertake, and expressly disclaim, any duty to update any forward-looking statement whether as a result of new information, future events or otherwise, except as required by law. Readers are cautioned not to place undue reliance on these forward-looking statements, which speak only as of the date hereof.*