

# Cboe Technology Integration Customer Conference Call

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## ❖ **Andy Lowenthal, Executive Vice President, Co-Head, Markets Division**

- Business update

## ❖ **Chris Isaacson, Executive Vice President, Chief Information Officer**

- Technology enhancements to Cboe Options (C1)
- Planned timeline and rollout for C1 migration
- Feature packs across options exchanges

## ❖ **Questions and Answers**

- Chris Isaacson
- Andy Lowenthal
- Eric Crampton, Senior Vice President, Global Head of Software Engineering
- Troy Yeazel, Senior Vice President, U.S. Operations
- Anthony Montesano, Vice President, Market Structure and Functionality

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## **C1 technology migration planned for October 7, 2019\***

- ❖ The migration of C1 expected to provide a better trading experience with proven, world-class technology that seamlessly integrates electronic and open outcry trading
- ❖ We plan to provide several resources to help you prepare for the migration including:
  - Customer meetings and discussions
  - Conference calls
  - Regular updates to integration website
  - Multiple testing opportunities
- ❖ Team remains focused on executing a seamless technical and operational integration
- ❖ Committed to ensuring you continue to enjoy the same great trading experience and customer service you've always had with Cboe Global Markets
- ❖ As we work through the integration, your feedback remains critical, continue to share your opinions, ideas and questions with the Cboe team

## Volume surge in October across multiple products and exchanges

### Monthly records:

- ❖ VIX futures total volume of 9.66 million contracts
- ❖ SPX options total volume of 41.4 million contracts
- ❖ SPX Weeklys ADV of 1.2 million contracts
- ❖ CFE, C2 Options and EDGX Options Exchanges total monthly volume
- ❖ Trading in SPX options is up roughly 25 percent year-to-date (through end of October) from the same period last year
- ❖ In heightened volatility environment, Bats technology performed exceptionally well in both regular and global trading hours sessions

## **Remain focused on our commitments to product innovation, seamless trading solutions and leading-edge technology**

- ❖ This fall, CFE began listing for trading Cboe<sup>®</sup> iBoxx<sup>®</sup> iShares<sup>®</sup> \$ High Yield Corporate Bond Index (IBHY) futures and Cboe<sup>®</sup> iBoxx<sup>®</sup> iShares<sup>®</sup> \$ Investment Grade Corporate Bond Index (IBIG) futures
  - These corporate bond futures allow users to hedge and mitigate corporate bond credit risk, to efficiently allocate to the corporate bond market and implement fixed-income trading strategies
- ❖ This month, we hosted our first Cboe RMC Tel Aviv, with approximately 150 attendees
  - We look forward to Cboe RMC Asia next month and our full schedule of RMCs in 2019
- ❖ We encourage your engagement with our team throughout the migration process – the new quoting interface feature pack is a direct result of our conversations with you

## Migration of SPX to Hybrid completed in April 2018

- ❖ The Hybrid market model is being built into Bats technology, but the market model for AM-settled SPX options (Hybrid 3.0) was not replicated as part of this effort
- ❖ Cboe retired the Hybrid 3.0 model and transitioned the AM-settled SPX options onto the Command system's Hybrid platform
- ❖ SPX Market Makers have been able to stream their own electronically accessible quotes and the book is now open to all market participants
- ❖ Initial results have been very encouraging:
  - Vast majority of Market Makers are streaming quotes electronically
  - Quote widths have narrowed by over 60%
  - Displayed size has more than doubled

## Introduction of the redesigned PAR 2.0 began in October 2018

- ❖ In advance of the full C1 migration to Bats technology, Cboe is introducing redesigned PAR workstations in two phases – PAR 2.0 and PAR 3.0
- ❖ PAR 2.0 will interface with the legacy Command system to prepare the PAR 3.0 interface for connecting to Bats technology once full C1 migration is completed
- ❖ **Rollout - Phase 1**
  - Began last month, on target to complete by year-end
  - Incorporates new UX and functionality to interact with legacy Command system
  - Legacy PAR and PAR 2.0 will run in parallel until legacy PAR is decommissioned
  - Product demonstration and opportunities to interact with PAR 2.0 are available at the Reporting Desk at Post 10 throughout rollout period
- ❖ **Rollout - Phase 2**
  - PAR 3.0 will interact with Bats technology and incorporate exchange platform changes to enhance order handling and market data delivery to PAR
  - Expected completion date will be ultimate C1 migration date of October 7, 2019\*

# C1 Migration: Planned Timeline and Rollout Schedule

- ❖ **November 16 (this Friday):** technical specifications available for the C1 migration
- ❖ To unify our options functionality across our four options platforms, we plan to introduce a total of nine feature packs:
  - Entitlements/reserve orders
  - Quoting interface
  - Electronic Secure Web API for post trades
  - Market data
  - Simple order auctions
  - All-or-None (AON) orders
  - Global trading hours/opening process
  - Complex crossing
  - Complex with stock legs
- ❖ The certification environment for the first two feature packs is already available
- ❖ **November 29, 2018\*:** production rollout for feature pack one
- ❖ **January 17, 2019\*:** production rollout for feature pack two

## **New physical connections to the C1 platform will be accepted at either 1G or 10G**

- ❖ **February 1, 2019:** new physical connections to the C1 platform accepted
  - C1 will have dedicated network infrastructure and customer connections
- ❖ **March 4, 2019:** kick off TPH certification testing
  - To ensure readiness for migration, all C1 TPHs and vendors/ISVs must certify to the new platform
- ❖ **April 1, 2019:** logical order entry sessions created in new production environment
- ❖ **April 2, 2019:** review logical ports existing on the new platform
- ❖ **May 6, 2019:** daily production testing with test symbols begins
- ❖ **October 7, 2019\*:** fees assessed for all order entry and DROP logical ports
  - Firms should work with the Cboe Trade Desk to ensure DROP lines are set up to DROP the expected data

## Five weekend tests planned in the new C1 production environment

❖ **May 6, 2019:** testing with test symbols available in new C1 production environment

### Weekend test dates:

- **June 15, 2019**
  - **July 27, 2019**
  - **August 24, 2019**
  - **September 14, 2019**
  - **October 5, 2019** (the final Saturday before migration)
- ❖ OPRA will participate in each weekend test
- ❖ OCC intends to participate in weekend testing
- ❖ Customers should plan to participate in as many weekend tests as possible
- ❖ **October 7, 2019\*:** C1 migration date, hard cut-over and legacy platform will be shut off; there will be no parallel period

## Feature pack one bundles enhancements to DPM entitlements and reserve orders

### Features:

- DPM small order entitlement allocation
  - Implementation of reserve and complex reserve orders
  - Implementation of new EFID group risk control
  - OCC customer ID and clearing member optional data field mapping
  - New sell market orders in no bid series behavior
- ❖ Testing for feature pack one in the BZX, C2 and EDGX options certification environments is already available
- ❖ **November 29, 2018\***: launch to production

## Feature pack two bundles enhancements related to the quoting interface

### Features:

- New BOE Quote Update message will be introduced, allowing firms to submit up to 20 updates via a single message on BZX, C2 and EDGX Options Exchanges
  - Will replace the current BOE Bulk Update message, which sends individual messages to the Matching Engine from the order gateway
  - New risk reset functionality
- 
- ❖ Testing already available in the BZX, C2 and EDGX options certification environments
  - ❖ **January 17, 2019\***: BOE Quoting messages available on EDGX
  - ❖ **January 25, 2019\***: BOE Quoting messages available on BZX and C2
  - ❖ **March 29, 2019\***: existing Bulk Order message deprecated in favor of Quote Updates

## **Feature packs three and four introduce electronic Secure Web API and material market data changes**

### **Feature pack three:**

- Will introduce an electronic Secure Web API for post-trade edits

### **Feature pack four:**

- Will include all material market data changes
- ❖ Certification and production dates for remaining feature packs will be announced via Trade Desk notices
- ❖ More information on each of the feature packs will be available on each Trade Desk notice
- ❖ Refer to the Integration Website for all of the latest information

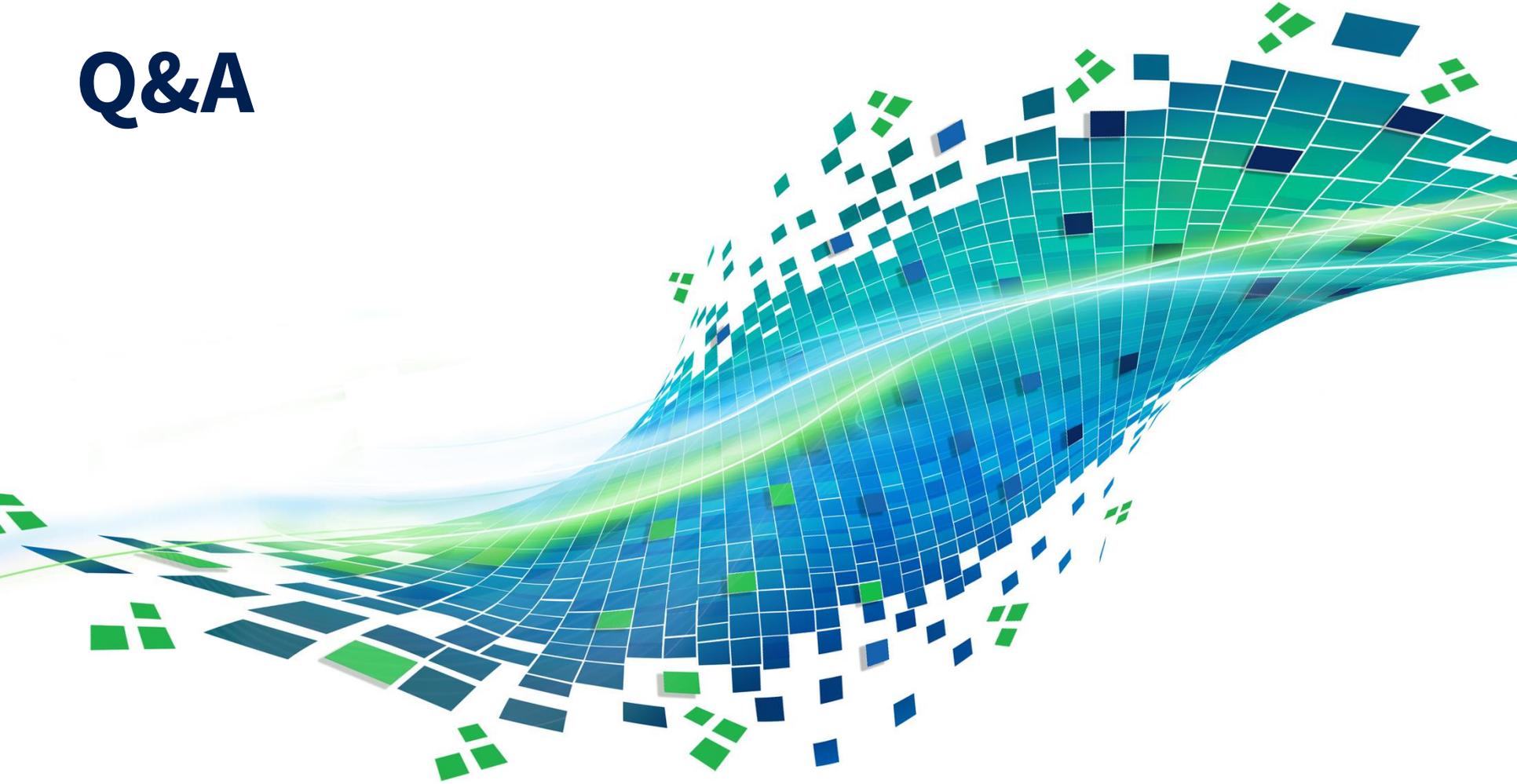
## **Integration website is home for all resources related to C1 migration**

- ❖ Technical specifications (posted this Friday)
  - ❖ Comprehensive FAQ
  - ❖ Planned migration timeline
  - ❖ Platform change matrix
  - ❖ Downloadable implementation guides
  - ❖ Information on customer calls – previous and upcoming
- ❖ [batsintegration.cboe.com/c1](https://batsintegration.cboe.com/c1)

## **11 months to prepare for C1 migration to Bats technology**

- ❖ Foundation to migration being laid with enhancements to C1 marketplace
- ❖ PAR 2.0 rollout on track to complete by year-end
- ❖ Nine feature packs rolling out now through the third quarter of 2019
- ❖ Technical specifications posted by November 16 (this Friday)
- ❖ Physical connectivity to new C1 platform available February 1, 2019
- ❖ TPH certification testing available March 4, 2019
- ❖ Production testing with test symbols begins May 6, 2019
- ❖ Weekend test opportunities begin June 15, 2019
- ❖ Planned migration for C1 is October 7, 2019\*
- ❖ For all information, visit: [batsintegration.cboe.com/c1](https://batsintegration.cboe.com/c1)

# Q&A





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