CME Group Customer Forum
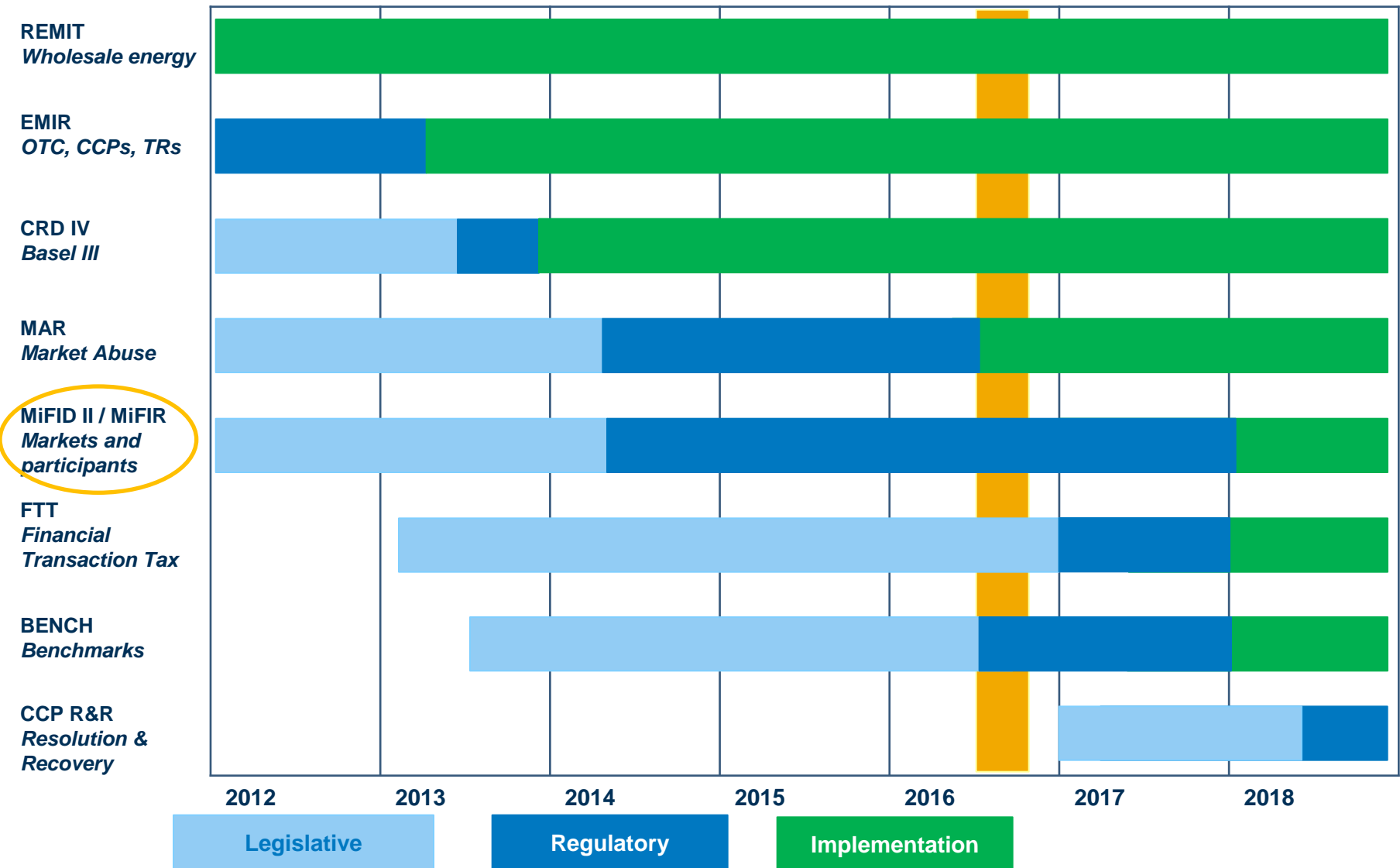
Fall 2016

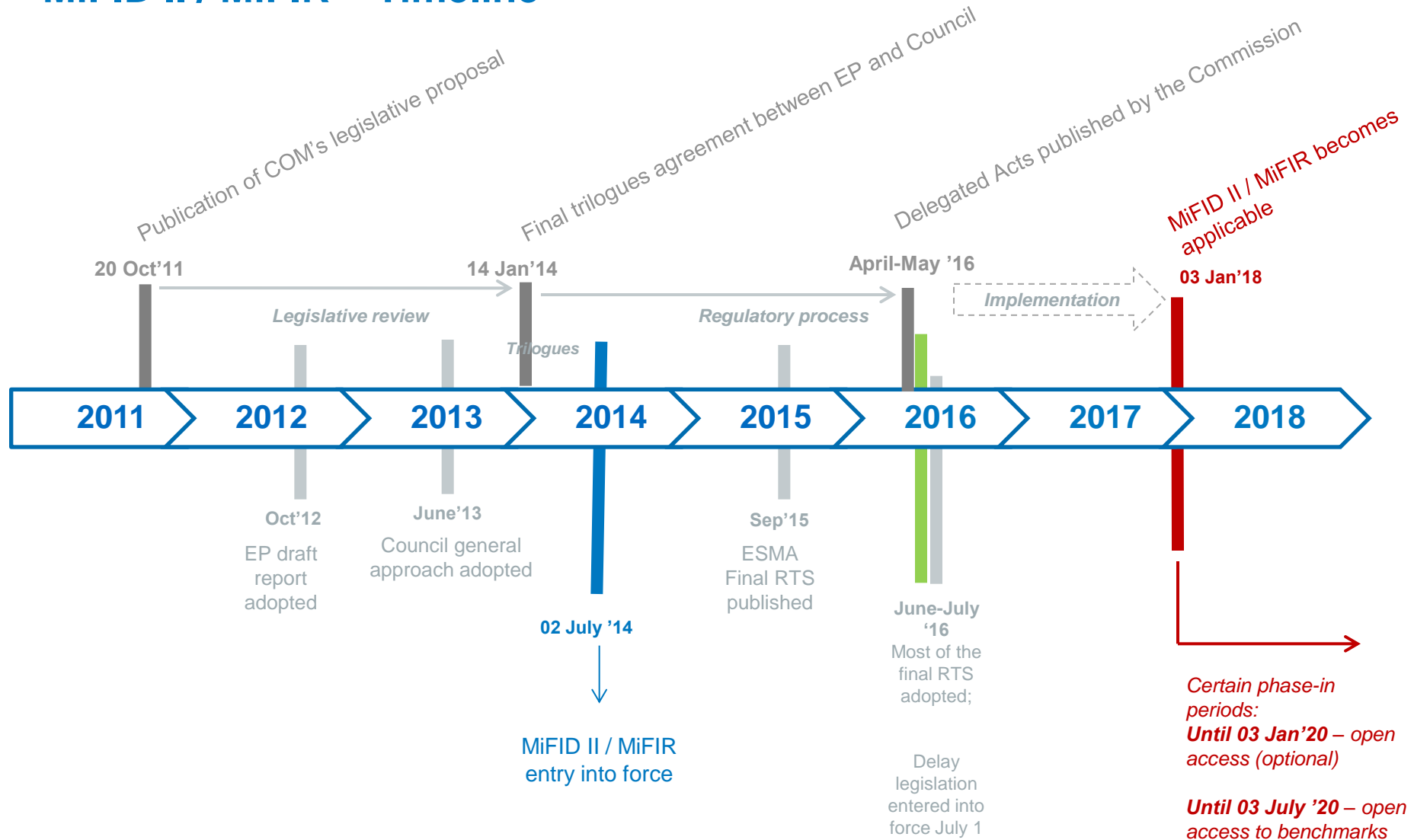|	
London:	1 Nov.
Seoul:	10 Nov.
US Webinar:	10 Nov.
Tokyo:	15 Nov.

Agenda

- EU & International Regulatory Update

- iLink Order Entry-Related Enhancements

- Market Data Changes

- Additional Globex Updates

- Technology Services Update

- EMEA Regional Update

- Quiz & Q&A

Key EU Regulatory Reform Timelines

Gantt-style timeline chart spanning 2012–2018 with categories:

- **REMIT** *Wholesale energy*
- **EMIR** *OTC, CCPs, TRs*
- **CRD IV** *Basel III*
- **MAR** *Market Abuse*
- **MiFID II / MiFIR** *Markets and participants*
- **FTT** *Financial Transaction Tax*
- **BENCH** *Benchmarks*
- **CCP R&R** *Resolution & Recovery*

Legend: Legislative | Regulatory | Implementation

MiFID II / MiFIR – Timeline

Publication of COM's legislative proposal

Final trilogues agreement between EP and Council

Delegated Acts published by the Commission

MiFID II / MiFIR becomes applicable

20 Oct'11

14 Jan'14

April-May '16

03 Jan'18

Legislative review

Trilogues

Regulatory process

Implementation

| 2011 | 2012 | 2013 | 2014 | 2015 | 2016 | 2017 | 2018 |

Oct'12
EP draft report adopted

June'13
Council general approach adopted

Sep'15
ESMA Final RTS published

02 July '14
MiFID II / MiFIR entry into force

June-July '16
Most of the final RTS adopted;

Delay legislation entered into force July 1

Certain phase-in periods:
Until 03 Jan'20 – open access (optional)

Until 03 July '20 – open access to benchmarks

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MiFID II / MiFIR

MiFID II / MiFIR is a broad regulatory reform package, the key provisions being:

- **Transparency:** Pre- and post- trade transparency requirements
- **Algo/HFT:** Regulatory controls on algorithmic trading/HFT and Market making
- **Registration requirements:** Props and Commodities firms
- **Clearing:** Indirect clearing, portfolio compression, STP
- **Commodities regulation:** Position limits and scope of regulation
- **Trading requirements:** TV obligations, and trading obligation (OTFs)
- **Reporting:** Transaction reporting for monitoring against market abuse
- **Data publication:** Data availability, disaggregation, reporting mechanisms, fees
- **Open access:** Non-discriminatory access to TVs, CCPs and Benchmarks
- **Best execution:** Requirements for TVs and market participants
- **Third country:** Recognition and equivalence for 3rd country investment firms

MiFID II / MiFIR

Pre and post-trade transparency – 'block rules'

Key legislative requirements – two components:

(1) a waiver regime for pre-trade transparency requirements; and

(2) a deferral regime from post-trade publication requirements.

Final detailed rules (RTS)

- ESMA has prescribed the framework for the transparency regime, including specification of the size of trades that will qualify for waivers and deferrals ('block thresholds').

- Trading venues must apply for waivers and deferrals to be issued during 2017. The thresholds to qualify for waivers and deferrals will be re-evaluated on an annual basis.

MiFID II does not apply to U.S. trading venues or clearinghouses. Trades executed on CME's U.S. markets will continue to be subject to CME Group's existing block and EFR rules, including for EU market participants.

MiFID II / MiFIR

Trading requirements: Trading obligation and OTFs

Key legislative requirements

- New trading venue category (OTF) for non-equities – implications include the scope of regulation (commodities trading firms), and the use of OTFs as an execution venue for the derivatives trading obligation

Implementation

- Details on the OTF category only defined at a high level (mandatory discretion and inability for operator to trade against orders), to be further defined at a national level through transposition of MiFID II. National consultations underway.

At this point, only the broad framework for the new trading obligation and the OTF category are in place. CME Group is speaking to industry participants to understand how OTFs will fit into existing market structure and has not determined whether there is a market need for us to launch an OTF. Our trading and clearing venues offer a wide variety of energy, rates and credit products and will be available to clients to meet their trading obligations.

MiFID II / MiFIR

Trading requirements: Trading obligation and OTFs

Key legislative requirements

- Introduction of a mandatory trading obligation for certain derivatives.

Implementation

- Primary procedure - there will be three main cumulative criteria for ESMA to consider:
  - Clearing obligation – whether a class or sub-class of derivatives is subject to the clearing obligation.
  - The venue test – whether a class or sub-class of derivatives is admitted to trading on an EU trading venue (trading obligation will be able to be satisfied on regulated markets, MTFs, OTFs and on equivalent third country trading venues).
  - The liquidity test – whether a class or sub-class of derivatives is "sufficiently liquid" and whether there is sufficient third party buying and selling interest.

- Note → *The European Securities and Markets Authority (ESMA) published a consultation on the derivatives trading mandates on September 19.*

CME Group's trading and clearing venues offer a wide variety of energy, rates and credit products and will be available to clients to meet their trading obligations.

CME Group

MiFID II / MiFIR

Transaction reporting requirements

Key legislative requirements

- Investment firms will be obliged to report all trades in financial instruments that are admitted to trading or traded on an EU trading venue, and those where the underlying is a basket of financial instruments traded on an EU trading venue, even if such transactions are executed outside the trading venue. Reporting must be made through an ARM or the trading venue through whose system the transaction was completed.

Implementation

- Work ongoing to specify details of the transaction reporting requirements, including – among others – data standards and formats, the conditions for the development, attribution and maintenance of legal entity identifiers, and the relevant categories of financial instruments that will be subject to reporting obligation.

CME Group is speaking to industry participants to understand how ARMs will fit into existing reporting structure and has not determined whether there is a market need for us to launch an ARM. Our trade repositories offer a wide variety of reporting solutions and will be available to clients to meet their reporting obligations.

MiFID II / MiFIR

Position limits for commodity derivatives

Key legislative requirements

- Position limits will be applicable for commodity derivatives and serve to limit the size of net positions that can be held by a market participant in ETDs and "economically equivalent" OTC contracts. Hedging positions held by, or on behalf of, non-financial entities will be exempted. Limits will be set by national authorities on the basis of the methodology prescribed by ESMA.

Implementation

- ESMA has prescribed that limits for cash and physically-settled contracts in the spot month will be set on the basis of 25% of deliverable supply and for non-spot months on the basis of 25% of the total open interest. National authorities will have flexibility to adjust the baseline figure +10% or -20%, so that no position limit can be higher than 35% or lower than 5%.

MiFID II does not apply to U.S. trading venues or clearinghouses. Trades executed on CME's U.S. markets will continue to be subject to CME Group's existing position limits rules, including for EU market participants.

MiFID II / MiFIR

Registration requirements

Key legislative requirements

- MiFID II amends or deletes a number of registration exemptions affecting proprietary trading firms and commodity market participants. A number of firms will become subject to increased regulatory requirements under MiFID II, including application of the EU capital requirements regime.

- There is a risk that such additional capital requirements will add material cost that precludes market making and harms liquidity on EU trading venues, therefore increasing the cost of hedging business risk for commercial hedgers and other end users on EU trading venues.

Implementation

- Commodity trading firms temporarily exempt from capital requirements until 2020, while a broader review takes place, including proposals for different registration categories for "systemic" and "non-systemic" investment firms

The MiFID II registration requirements generally apply where a firm trades on EU trading venues.

Agenda

- EU & International Regulatory Update

- **iLink Order Entry-Related Enhancements**
  - **Security Ecosystems**
  - **iLink 3.0**
  - **Volatility Quoted Options & Triangulation**
  - **New Market Segment in FX**
  - **Mass Quotes**
  - **In-Line Credit Controls**

- Market Data Changes

- Additional Globex Updates

- Technology Services Update

- EMEA Regional Update

- Quiz & Q&A

CME Group Security Ecosystem

Security Enhancements and Requirements

End of Year 2016

To deliver the best security and customer experience, all certified customer-facing applications that support human-to-machine authentication to CME Group systems will be required to support

- Strong passwords (standard guidelines from NIST and ISO)
    - Minimum 8 characters
    - Requires numbers, symbols, capital and lower-case letters
- Encryption of confidential and sensitive data
- Two-factor authentication

Required for both customer-facing services connected to CME Group and to their services exposed to clients

CME Group

CME Group Security Ecosystem

Security Enhancements and Requirements

Targeting Mid 2017

- Expand security on iLink and Drop Copy sessions
  - Aimed to prevent account spoofing and repudiation without requiring full encryption
  - Session authentication: a digitally-signed logon request replaces session password
  - Key requests through CME Customer Center
  - New logon procedure for CGW, MSGW, and Drop Copy sessions
    - Applies to iLink 2 (FIX ASCII) and iLink 3 (FIXP Binary)
  - Digital signature using a hashed method authentication code (HMAC) replaces plain-text password
    - Customer creates digital signature using secret key and access key provided by CME Group
    - Keys can be invalidated through the CME Customer Center for forced rotation

iLink 3.0

Introduction to FIX Performance (FIXP) and SBE for order entry

- Improved Performance
  - Binary encoding of order entry business messages
  - New FIXP session layer to establish and maintain connectivity between customers and the exchange
- Risk Mitigation
  - "Cancel on behalf"
- Simplicity
  - Support lean messages
  - Include all spread and leg fill messages as part of a single fill message
  - Replace error text with error codes across the board in iLink 3.0
- Specifications available end of year
  - New Release available 2017
  - Production launch 2018
- iLink 3 and iLink 2 will be available in parallel for both CGW and MSGW sessions
  - iLink 2 will be decommissioned at the end of the parallel period

iLink 3.0

Enhancements to order entry on CME Globex

- Application-level optimization
  - More efficient messages, focused on critical information only
  - Optimized business semantics
- Presentation level: encoding
  - Simple Binary Encoding (SBE) for faster encoding/decoding
  - Harmonize the order entry and market data presentation levels to simplify client architecture
- Session-level optimization
  - FIXP for session protocol connectivity and session layer messages
  - Allow multiple publishers to share a connection without coordination
- Drop Copy will support both iLink 3 and iLink 2 source sessions
  - Drop Copy applications will be required to certify for and support iLink 3 source messages upon launch

Volatility-Quoted Options & Triangulation

Overview

Volatility-Quoted Options

- Allow clients to trade an option in terms of implied volatility instead of price

- Reduce execution risk with "auto-hedge" into the corresponding underlying futures

- Participants exchange an option in premium and a delta hedge of underlying futures

- Initially available in six major FX options: EuroFX, British pound, Japanese yen, Canadian dollar, Swiss franc and Australian dollar

Triangulation

- Link the Volatility-Quoted Options (VQO), Premium-Quoted Options (PQO) and futures books via implied options pricing calculations to find match opportunities between all three order books

- Extended access to combined option liquidity pools

- Initially launch in Australian dollar products

- Impacts all customers in Australian dollar futures, PQO, and VQO

- The VQO, PQO, and futures book will be moved to a single market segment before Triangulation launch

New Market Segment (MS) for FX Markets

Consolidate the VQO, PQO, and Futures FX books on a single MS for Triangulation

- Customer Impacts:
  - Permission your firewalls and update your order routing config - Connect to new MSGW IPs to trade via MSGW sessions
  - Permission your firewalls – New source IP for MDP3 channels
  - New MDP 3.0 and MSGW config.xml files will be published with all the info
  - GT orders for the impacted FX products will be cancelled
  - No changes to MDP 3.0 channels, functionality or messaging format

	MDP 3.0 Channel	Market Segment ID	**New** Market Segment ID	New Release	Launch
CME Globex FX Options	314	62	88	November 21	January 22
CME Globex FX Futures	315	52	88	December 12	February 5

Customer mock trading session: Saturday, January 21, 2017.

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Launch Schedule for VQO and Triangulation

Available Now
- **Volatility-Quoted Options in New Release**

Nov 13, 2016
- **Volatility-Quoted Options in Production**
  - Mock trading session: Saturday Nov 12

Q1 2017
- **Triangulation in New Release**

Q2 2017
- **Triangulation in Production**
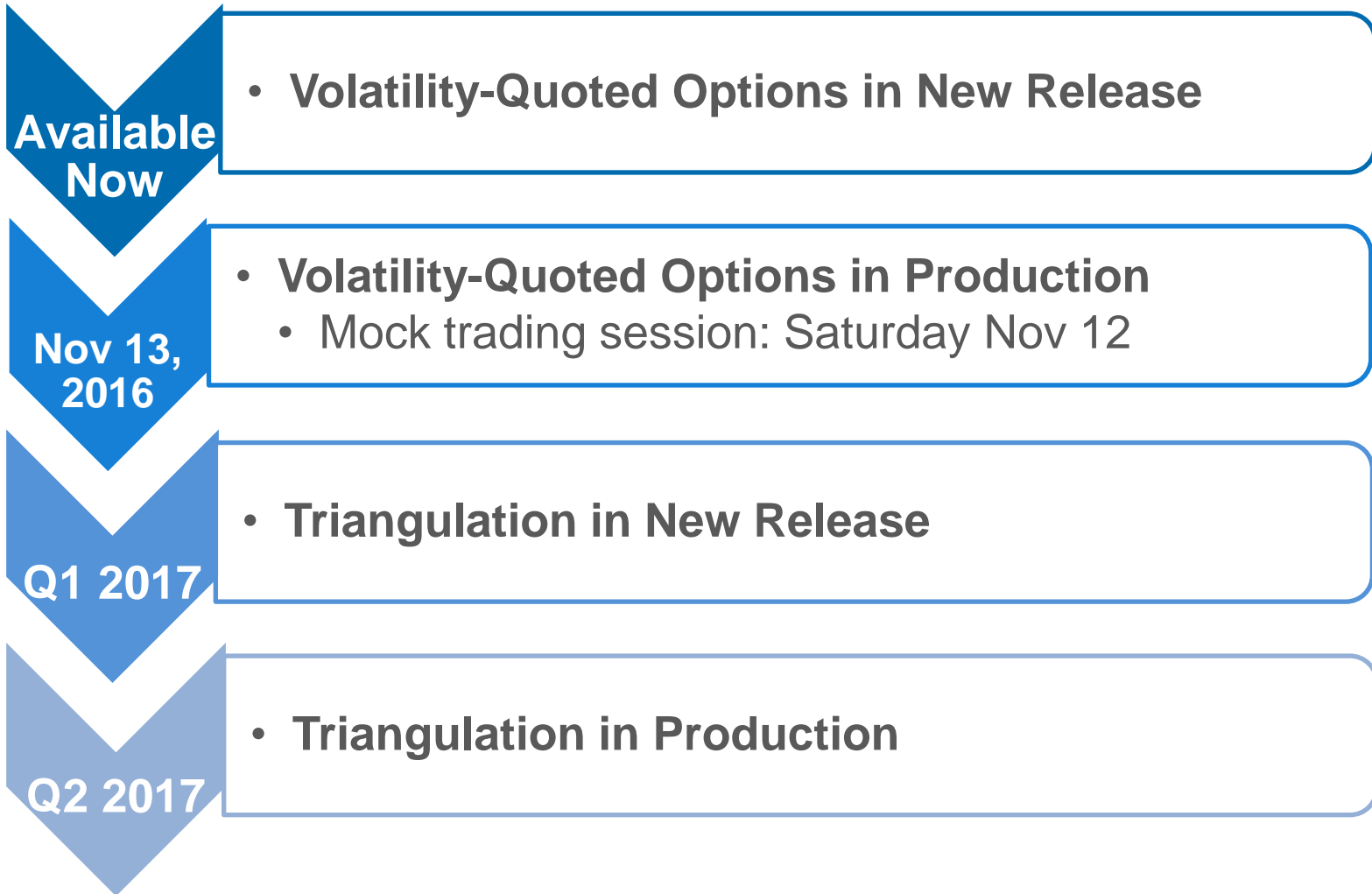
Mass Quote Changes Review

Reduce operational overhead and improve Customer Experience in options Market Making

- February 2016 Enhancements
  - Number of quote sets and quote entries reduced to 15 to ensure most efficient message construction and handling
  - Mass Quote Protections interval reduced to 1 second to better meet the needs of real-time market behavior; previously was set to 15 seconds

- July 2016 - Messaging Controls
  - Mass Quote and Mass Quote Cancel messaging control implemented
    - 500 Messages per Second (MPS)
  - This month, the level was reduced to 350 MPS

- October 2016 - Quote Governor decommission
  - Reduce operational burden of managing Mass Quote sessions
  - Normalize Mass Quotes functionality across the entire market

- **1Q 2017**
  - **Cancel by Quote Set ID**
  - **Allows customers to create custom quote associations and cancel just the associated quotes**

In-Line Credit Controls (ICC)

New Pre-Trade risk tool which will allow for daily quantity position limits, per product, at the Executing Firm + account level
- More granular limits than Globex Credit Controls (GC2)
- Long and short position limits can be set on future and option products separately
- Account registration required
- Limit management via CME Account Manager

No latency disadvantage
- All orders submitted to Globex will pass through ICC, regardless of whether the account is registered within the tool

Functionality includes:
- Clearing Firm and Executing Firm Risk Admins may both register accounts
- Clearing and Executing Firm Risk Admins can set their own limits on the same account
- Most restrictive limits will apply
- Excel upload feature for bulk account registration and limit setting
- Configurable email alerts & Risk Admin dashboard for monitoring

New Release: Q4 2016
Production Launch: Q1 2017

In-Line Credit Controls (ICC)
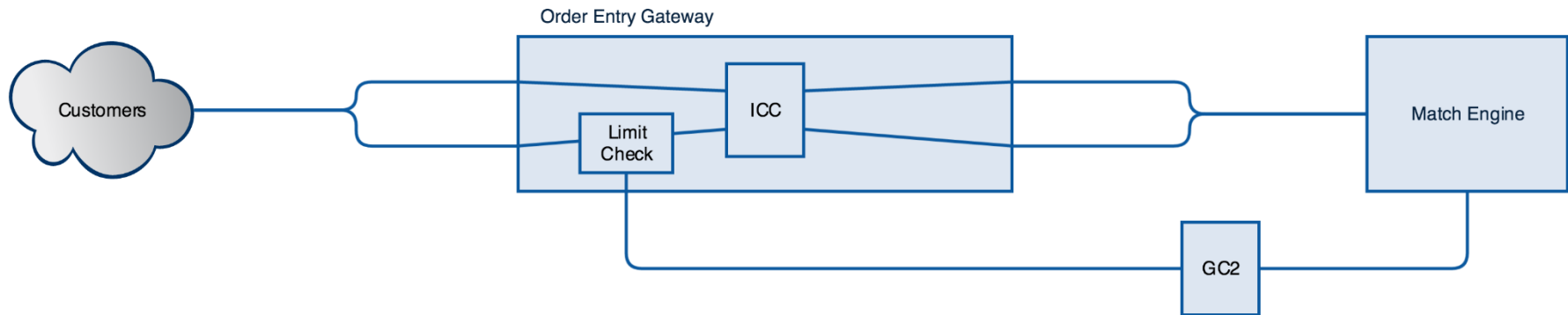
	Where	Basis	Level	Scope
ICC	In-band	Position-Based	Firm +account +product +side	Each product tracked separately
GC2	Out-of-band	Net Dollar Value	Executing Firm	CME Globex-wide

| Admin Settings | Limits Monitoring | Accounts | Credit Controls | Account Groups | User & Firm Limits | Audit Trails | Upload | Alerts | About |

Account Credit Control

View Account Details   Back to Search

˙ denotes CME SEF registered firm

Clearing Member	Diamond Clearing
Account Number	3SVCS-001
Account Owner	T0-SHAIL-TRADERFIRM
Agency Cross	Enabled
Account Status	Active *** De-activate

| Globex Inline Credit Control | Globex Trading |

Execution Firm   SilverTone Trading (456) ▼ *** Suspend Order Entry

☑ Show Products with individual limits only   Product Group: All   Text Search Product

* If Product limits are not set, all orders for the product will be accepted
* Limits appearing in Green are enforced limits;
* Limits appearing in Orange are the actual limits and serve as an indication that the corresponding limit set here is not yet effective. Please note- if the Globex markets are currently closed, the changes will become effective once the markets are open.

		CMF Limits		EF Limits	
Product Group	Product Name (Symbol.Type)	Max Qty Long	Max Qty Short	Max Qty Long	Max Qty Short
FINANCIALS - INTEREST RATE - SHORT TERM NON-GOV	1 MONTH EURODOLLAR FUTURES (GLB.FUT)	200	200	150	150
COMMODITY - ENERGY - REFINED PRODUCTS - EUROPEAN	1% Fuel Oil Barges FOB Rdam (Platts) vs. 1% Fuel Oil Cargoes FOB NWE (Platts) BALMO Futures (EBE.FUT)	850	200	700	300
COMMODITY - ENERGY - REFINED PRODUCTS - EUROPEAN	Mini European 1% Fuel Oil Barges FOB Rdam (Platts) BALMO Futures (0A.FUT)	Not Set	Not Set	501	56

Agenda

- EU & International Regulatory Update

- iLink Order Entry-Related Enhancements

- **Market Data Changes**
    - **Steamlined SBE**
    - **Market by Order**
    - **Trade Summary**
    - **BitCoin**

- Additional Globex Updates

- Technology Services Update

- EMEA Regional Update

- Product Updates

- Quiz & Q&A

Streamlined FIX/FAST Migration to Streamlined SBE

Simple Binary Encoding (SBE) - Market Data

- Streamlined FIX/FAST market data is a dedicated set of data feeds of non-Globex Market Data which include:
  - Block Trades
  - Equity Indices (e.g., S&P, Dow Jones, Bloomberg)
  - Eris Exchange products
  - OTC Daily Market Data (i.e., end of day information)

- Streamlined FIX/FAST has a message specification and template distinct from those available for CME Globex

- Simple Binary Encoding (SBE) streamlined MD channels launch complete January 2017
  - Aligns with MDP 3.0 encoding format
  - Blocks release will include bundled spread and leg executions enhancement
  - All other feeds will be ported to SBE data with standard functionality to ease migration
  - Legacy solutions, FIX/FAST and ITC for blocks, will be retired

Streamlined FIX/FAST Migration to Streamlined SBE

- **Customer impacts**
  - Mandatory certification per feed to consume streamlined SBE in production
  - New schema and new SBE messaging
  - Client system impact document available on cmegroup.com
  - Rolling migration, starting with Block Trade data feeds
  - Streamlined FIX/FAST, SBE and ITC feeds will be available in parallel in production
    - Bloomberg Equity Indices will be a hard cutover
- All SBE feeds are available in New Release for testing

Production Launch Schedule		FIX/FAST and ITC2 Decommission Schedule	
Blocks, Equity Indices (S&P & Dow Jones), Eris Exchange	Available	Blocks CME/CBOT/CME Europe; OTC-EOD	Dec 30
OTC End of Day Market Data	Nov 13	Equity Indices (Bloomberg, S&P & Dow Jones)	Jan 20
Equity Indices (Bloomberg)	Jan 22	Blocks NYMEX/COMEX/DME	Mar 31
		Eris Exchange	Apr 21

Market By Order Market Data

CME Globex Market By Order (MBO) will provide:

- Individual queue position; size of individual orders at a price
- Full depth of book
- Increased confidence in execution by improved transparency into detailed book composition
- Maintains anonymity

MBO and Market By Price (MBP) Information on a Single Feed

- MBP remains unchanged
- Avoids the need to arbitrate between separate MBO and MBP feeds

Customer impacts

- New schema and use of template appended extensions for new MBO fields
- Overall incremental feed bandwidth is expected to increase 30-40%.
- During peak times, the number of incremental feed packets per millisecond may increase up to 40-50%.
- Mandatory certification to use MBO data in production
- No certification required to continue to use MBP, however testing is recommended

Market By Price vs. Market By Order

CME Globex current MBP solution offers price, quantity at the price, and the number of orders in the quantity
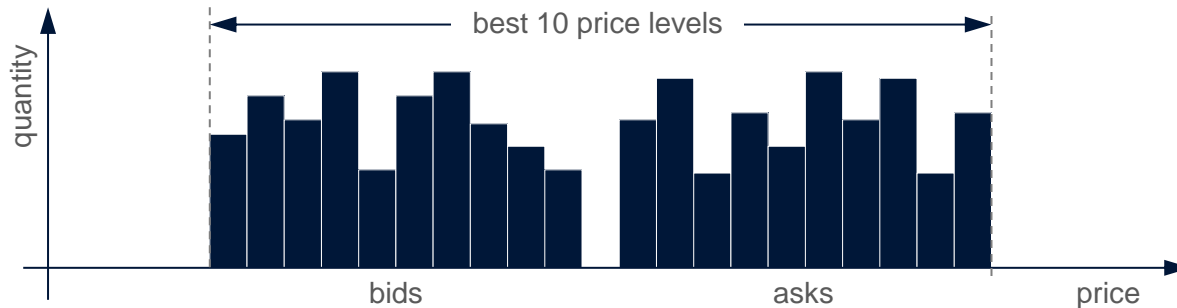
MBO shows individual order sizes that make up the total quantity at a price, including their priority in the queue
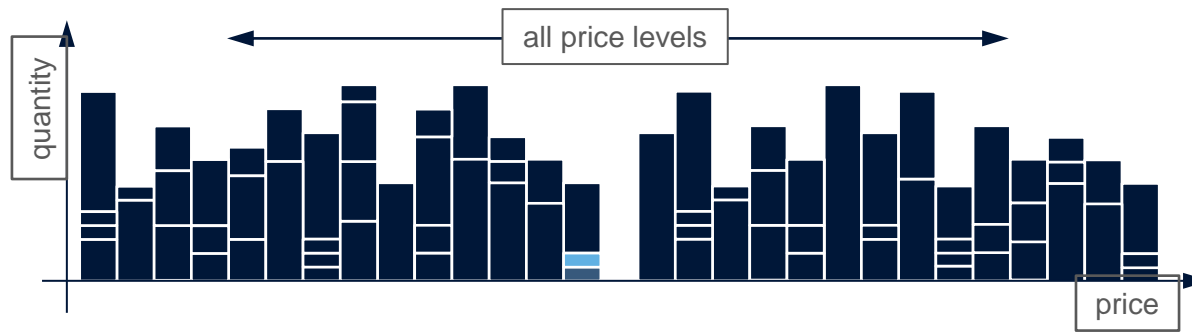
Market By Order Market Data

- No change to Presentation (SBE), Session, Transport, or Network layers

- Sequencing by order priority
  - No book management instructions in the market data feed
  - Book is built on receipt by sorting by price and then order priority
  - No change in market data based on matching algorithm

Action	Order priority	Quantity	Security Name	Order ID	Price	Side
Add bid 1 CLZ6 @46.70	400100	1	CLZ6	**5436415**	45.70	B
Add bid 1 CLZ6 @46.71	400101	1	CLZ6	**5436416**	45.71	B
Add bid 1 CLZ6 @46.70	400102	1	CLZ6	5436417	45.70	B
Cancel **5436416**	400101	1	CLZ6	**5436416**	45.71	B
Modify **5436415**	400103	2	CLZ6	**5436415**	45.70	B

- Implied Data
  - MBP order book updates continue to be the source of all implied prices which will be in line with MBO updates

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MBO Implementation on CME Direct

In CME Direct, in addition to the usual Bid and Quantity columns, there will be Order Priority (number of orders ahead of you) and Quantity Priority (number of contracts ahead of you). Displayed market depth will not change.

Two new MBO columns. One for Bid, one for Offer.

Total quantity in front of your Order and the position of your Order.

Market By Order Market Data

- Client Impact Document & New Release Available Now

- Phased Production Rollout by DCM in Q4 2016: Q2 2017

  - CME Europe, NYMEX, COMEX and DME: December 4 – January 22

    – Mock: November 12

  - CBOT and MGEX: March 26 – April 9

    – Mock: March 11

  - CME: May 7 – May 21

    – Mock: April 22

  - BMD/KRX: June 4

    – Mock: April 22

- MBO historical data will be captured as products are enabled with MBO in production

Trade Summary OrderID Opt-in Update

- To increase market transparency and simplify iLink messaging, beginning Dec 4, all tag 37-OrderID values will be published in the Market Data Incremental Refresh Trade Summary messages
  - iLink will no longer support FIX tag 1091-PreTradeAnonymity. CME Globex will not send tag 1091 to client systems, even when submitted on the original iLink message

- MDP 3.0 currently supports an opt-in solution to allow order entry participants to determine if their OrderID would be published in the Trade Summary message

- With the introduction of MBO, OrderID will also be included for all orders in the **book messaging**

Bitcoin Pricing Data via Streamlined SBE

CME Group and Crypto Facilities will launch two Bitcoin pricing products

- A reliable reference rate price source for digital assets
- CME CF Bitcoin Reference Rate (BRR) aggregates the trade flow of major Bitcoin spot exchanges during a specific calculation window and provides a final settlement price in U.S. dollars shortly after 4 p.m. London time on each trading day.
- CME CF Bitcoin Real Time Index (BRTI) aggregates global demand to buy and sell Bitcoin into a consolidated order book and reflects the real time U.S. dollar price of Bitcoin disseminated once every second.

- **Key Milestones**
  - New Release – October 3
  - Available in AutoCert+ - October 24
  - Production – November 13

- **Customer Impacts**
  - New Bitcoin Streamlined SBE market data feed - channel 213
  - New exchange code to identify Bitcoin market – CRYP
  - Certification not required for customer systems already certified for streamlined Equity SBE.

Agenda

- EU & International Regulatory Update

- iLink Order Entry-Related Enhancements

- Market Data Changes

- **Additional Globex Updates**
  - **Data API**
  - **Energy & Metals**
  - **Global Partnerships**
  - **Global Repository Services**
  - **Customer Experience**

- Technology Services Update

- EMEA Regional Update

- Product Updates

- Quiz & Q&A

Referential Data API

Q1 2017 Launch

- Real-time insight into product and instrument information to support
  - Simplified Cross-Exchange Risk Management
  - Product risk, audit and reconciliation applications

- All CME Group-cleared products included

- Cloud-hosted machine-readable Json RESTful Service with query support

- Specifications and Beta product service Q1 2017

- Coming later in 2017:
  - Product relationships:
    - Within Exchange: WTI (CL) ☐ WTI/Brent Spread (BK) ☐ Brent (BZ)
    - External Exchange: CME:GBP = CME Europe: GBP
    - Settlement and Statistical data
    - Human-readable specifications for UI presentation
      - E.g., Contract Termination: Trading in the current delivery month shall cease on the third business day prior to the twenty-fifth calendar day of the month preceding the delivery month.
    - 3rd-party product codes
    - Integration with Historical Data API

CME Globex Enhancements for Energy & Metals Products

Related to NYMEX Floor Close

October 2016 launch

- Expanded User-Defined option outright instruments (UDI) to meet any trader's needs

- Create a strike for a maturity up to 19 years out

- Create the first strike for a listed underlying futures instrument
  - Must follow Rulebook listing rules

Later this year:

- Exchange-defined options strikes will be harmonized to reduce processing demands and encourage UDI support

- New strategy types for spread trading

- UDI functionality expanded to more markets
  - Currently restricted to NYMEX and COMEX markets
  - Will be expanded to all CME Globex options markets

Global Partner Updates

Dubai Mercantile Exchange

- July 1st successfully auctioned Oman Crude Oil with the first ever Middle East Spot Commodity Auction system

- September 18th, launched Singapore vs. Middle East 180 & 380cst Fuel Oil spread futures to expand upon their May 16th Fujairah Fuel Oil product listing

Korea Exchange

- Listed additional longer month series of USD/KRX futures contracts effective Monday September 26th.

Bursa Malaysia

- The 10-yr Malaysian Government Security future (FMGA) was launched on Monday September 19th to add to a suite of 3-yr and 5-yr Malaysian Government Security futures.

- Tin futures (FTIN) was successfully launched on Monday October 31st

- High Volume Trader Incentive Program for HVT's. Please Contact:

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tankahloong@bursamalaysia.com

Global Repository Services

Expanding into Singapore in 2017

Currently exploring MiFID & SFTR solution

Total GRS volumes of new trades have hit 1 Billion

Over 1500 global customers across all segments

Vendor incentive program

Global reporting solution for OTC cleared and un-cleared, as well as Futures

CME Group

Invested in Improving Customer Experience

Understanding your business needs and providing value in every interaction

- Adopted user-centered design, a process to gather customer input on tools and technology, to ensure what we build meets your needs

Making it easier to do business with CME Group

- Launched a suite of self-service tools to make it easier and faster to complete administrative trading functions
  - iLink Session Management – create and manage iLink session IDs
  - Globex Firm IDs – request new GFIDs and manage CF relationship mapping
  - Drop Copy – create and manage Drop Copy groups
  - User Administration – manage user access and entitlements for CMEG applications
  - Clearview – access to clearing reports and delivery schedules
- Increased transparency and readability of our fee schedule; built tools to speed access to non-member fee information

Becoming more responsive to your needs

- Enhanced Corporate Membership process by instituting a concierge team to provide clarity and speed to the application process
- Improved access to information on cmegroup.com leveraging Google search capabilities, redesigning content, and added translation in nine additional languages

CME Group

What's next

- Deliver clearing member firm back office fee reconciliation process efficiency through the Duco Fee Data Control and Reconciliation Service
  - Duco Cube allows non-IT users to load data sets and perform comparisons to quickly and easily find discrepancies between exchange and back office system data
  - Available January 2017
  - Contact Clearing Client Services for more information
    - ccs@cmegroup.com
    - Chicago (312) 207 2525 | London (44) 203 379 3198 | Singapore (65) 6593 5591

- Launch new self-service capabilities in 2017:
  - Incentive program management
    - View your firm's active program suite and perform online renewals
  - Streamlined registration for:
    - Tag 50s
    - Clearport
    - CME Direct
    - OTC Counterparties

- Extend User Administration capabilities to more CME Group applications
  - Risk Management Tools
  - Banking and Asset Management

- Enhance the Customer Center user interface for improved usability

Agenda

- Regulatory Updates

- iLink Order Entry-Related Enhancements

- Market Data Changes

- Other Globex Updates

- **Technology Services Update**
  - **DataMine**
  - **CME Direct**
  - **Market by Mobile**
  - **STP**
  - **Trade View**
  - **ClearPort**

- EMEA Regional Update

- Quiz & Q&A

CME DataMine Portal

- Launched October 20th (powered by TickSmith)

- Cloud based, online self-service portal for searching, ordering and delivering historical market data electronically

- Roadmap highlights include API query tool, order book replay, integration with 3rd party datasets and much more…

CME Direct: Futures, Options, OTC Markets on a Single Platform

- Real-time streaming quotes with market depth
- Multiple order types, order duration and order protection functions
- Integrated option analytics resources through QuikStrike, providing historical volatilities, heatmaps and scanning

- Globex RFQs, option strategy creation, including covered and multi-leg
- Real-time option volatility surfaces and option Greek calculations
- Electronic block submission
- Automated orders (coming soon)
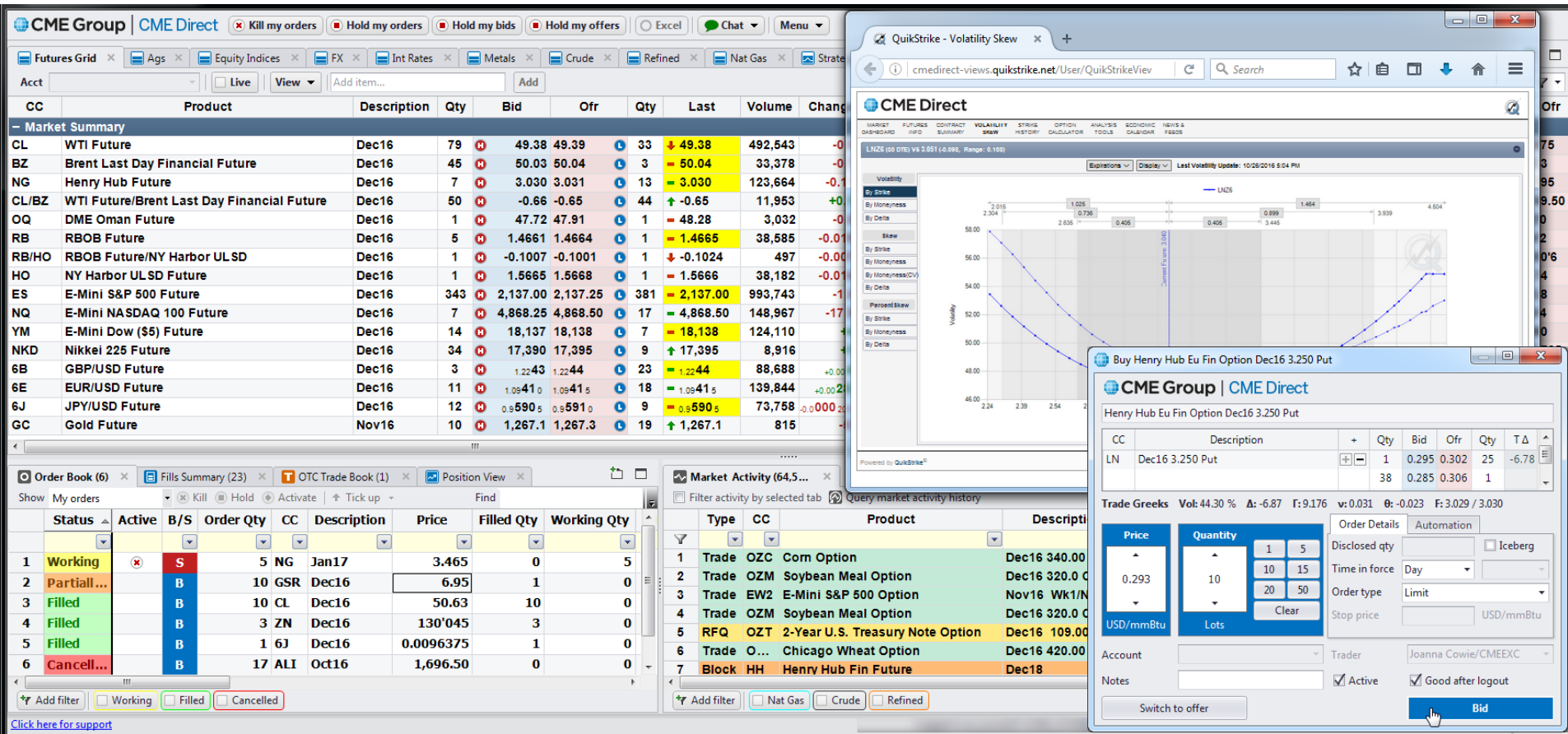
Moving Markets by Mobile (Sneak Peak)
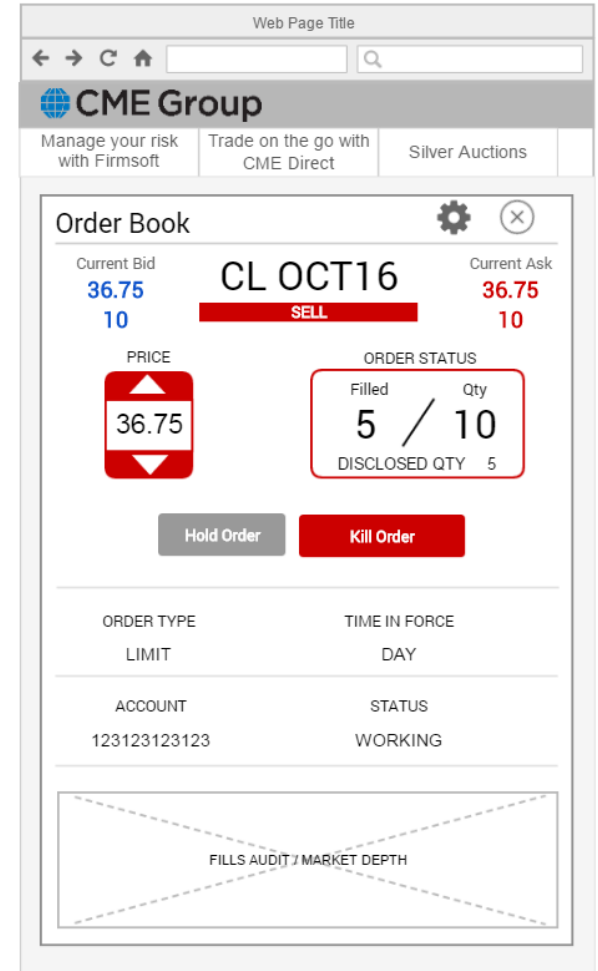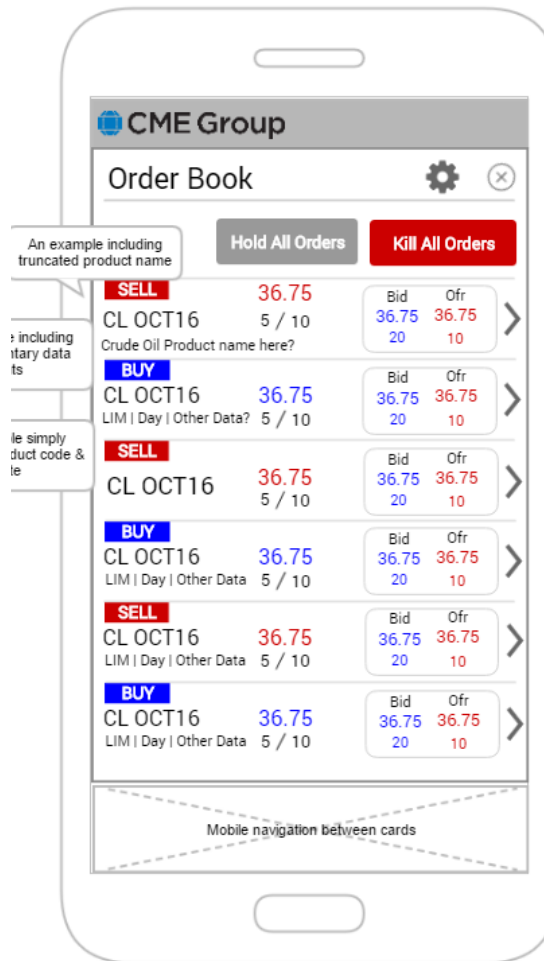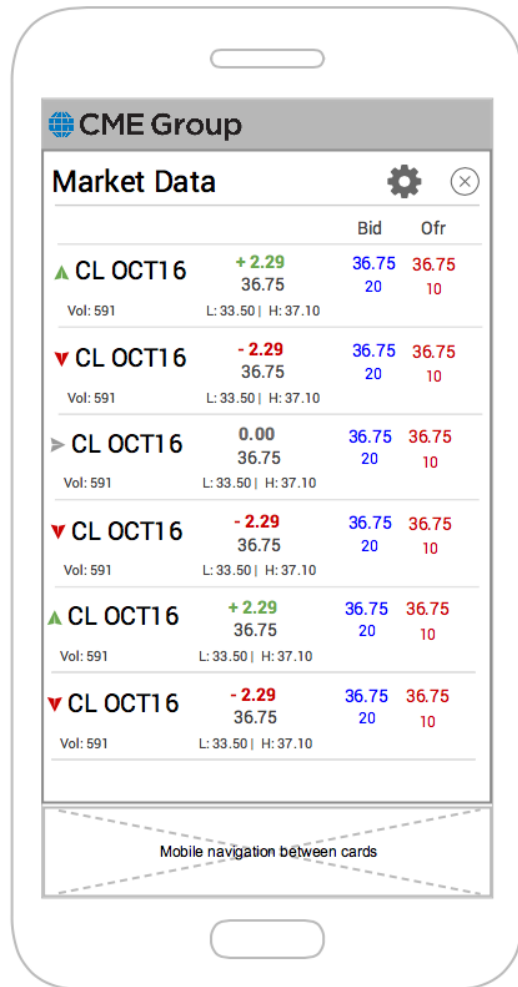
Benefits of CME STP

Capture your Cleared Trades Data directly into your risk system

- Direct Feed , as no cost, from Exchange to customers

- Customers do not have to rely on FCM for data, one source for all exchange transactions

- STP for all cleared trades regardless of venue, exchange, front end

- Single Sign on with CME Group Login -manage multiple subscriptions

- Shift error checking to the Front Office – trader has ability to review STP trades in real time

- Available in FIX or FIXML format

- Reduces the time, cost, and risk associated with manually entry

- *Coming soon*:

    - User Interface for trade view and reconciliation

CME STP Workflow

Execution

- Broker
- PIT
- CME Direct, ISV or proprietary system

Exchange

- CME Clearing
- CME Globex
- CME STP

Customer Front Office

- Customer Risk Systems
- Customer Accounting Systems

FIXML
Internet/HTTPS

CME Group
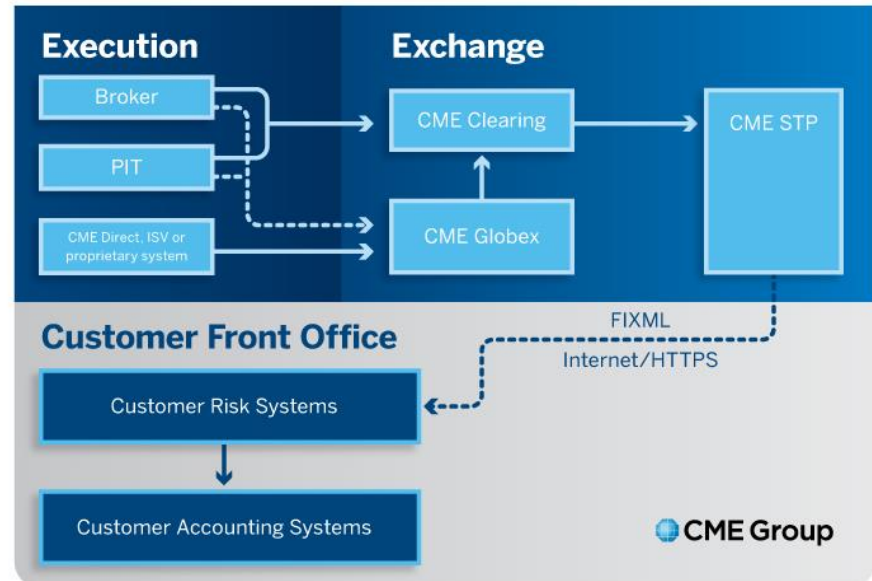
CME Trade View – Coming Soon

Allows a firm to view its Globex, ClearPort, broker bilateral and cleared elsewhere trades

Search Trades   My Profiles: WTI Q1 2017 strip - C3310302

Firm Type	Firm	Trans Type	Start Time	Include time?
Trading Firm	HEALY_BROTHERS_A...	Spread	21 Aug 2016	

Hide Advanced Search ⌃

Trade Date	Instrument Type	Exchange	End Time	Include time?	Cycle Date	Product	Input Source	Venue Type
							CPC	

Trade ID	Secondary Trade ID	Client Order ID
		C3310302

[Q Search] [↺ Reset]

Symbol	Product	Exchange	Instrument Type	Strategy Type	Underlying Instrument Type	Trade ID	Secondary Trade ID	Exec ID	Record Type	Qty	Price	Trade Date	Transaction Time (CDT)	Trans Type	Side	Input Source	Client Order ID	Trading Firm	Broker	Asset Manage
BZX6	BZ	NYMEX	FUT			100024	156A1642459LAP0004D15FD0	07504520160819045657TN0000001	New	1	51.4	08/19/2016	08/19/2016 04:56:57	Outright	BUY	GLBX	12257	Healy Brothers Arbitrage		
CLU6	CL	NYMEX	FUT			100132	156AF23C693LAP0004D4BEB8	01109720160822065338TN0001739	New	1	47.68	08/22/2016	08/22/2016 06:53:38	Outright	BUY	GLBX	12584	Healy Brothers Arbitrage		tfg
HHU6	HH	NYMEX	FUT			100019	156B5FDA27ELAP0004D13B42	02309520160823033042TN0000001	New	1	2.671	08/23/2016	08/23/2016 03:30:42	Outright	SELL	GLBX	12791	Healy Brothers Arbitrage		tfg
NGX6	NG	NYMEX	FUT			100020	156B5FDA27ELAP0004D13C8C	02310620160823033148TN0000744	New	4	2.879	08/23/2016	08/23/2016 03:31:48	Outright	SELL	GLBX	12793	Healy Brothers Arbitrage		

CME ClearPort Tiered Credit
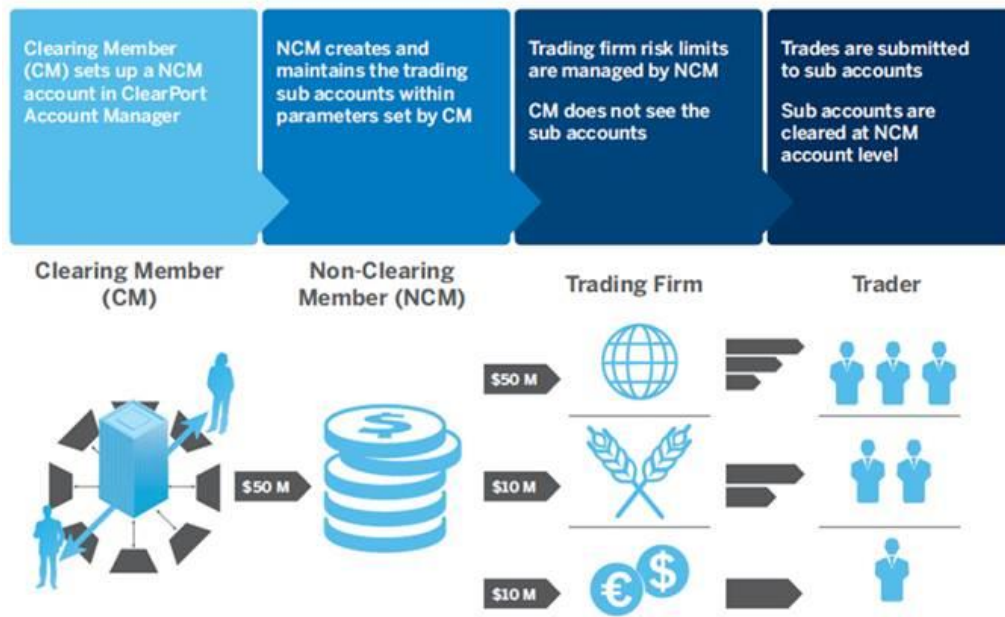
Non-member Broker Intermediary account structure provided non-clearing FCMs the ability to establish trading accounts for their individual customers and manage risk on the individual customer level, while preserving customer anonymity from their clearing FCM
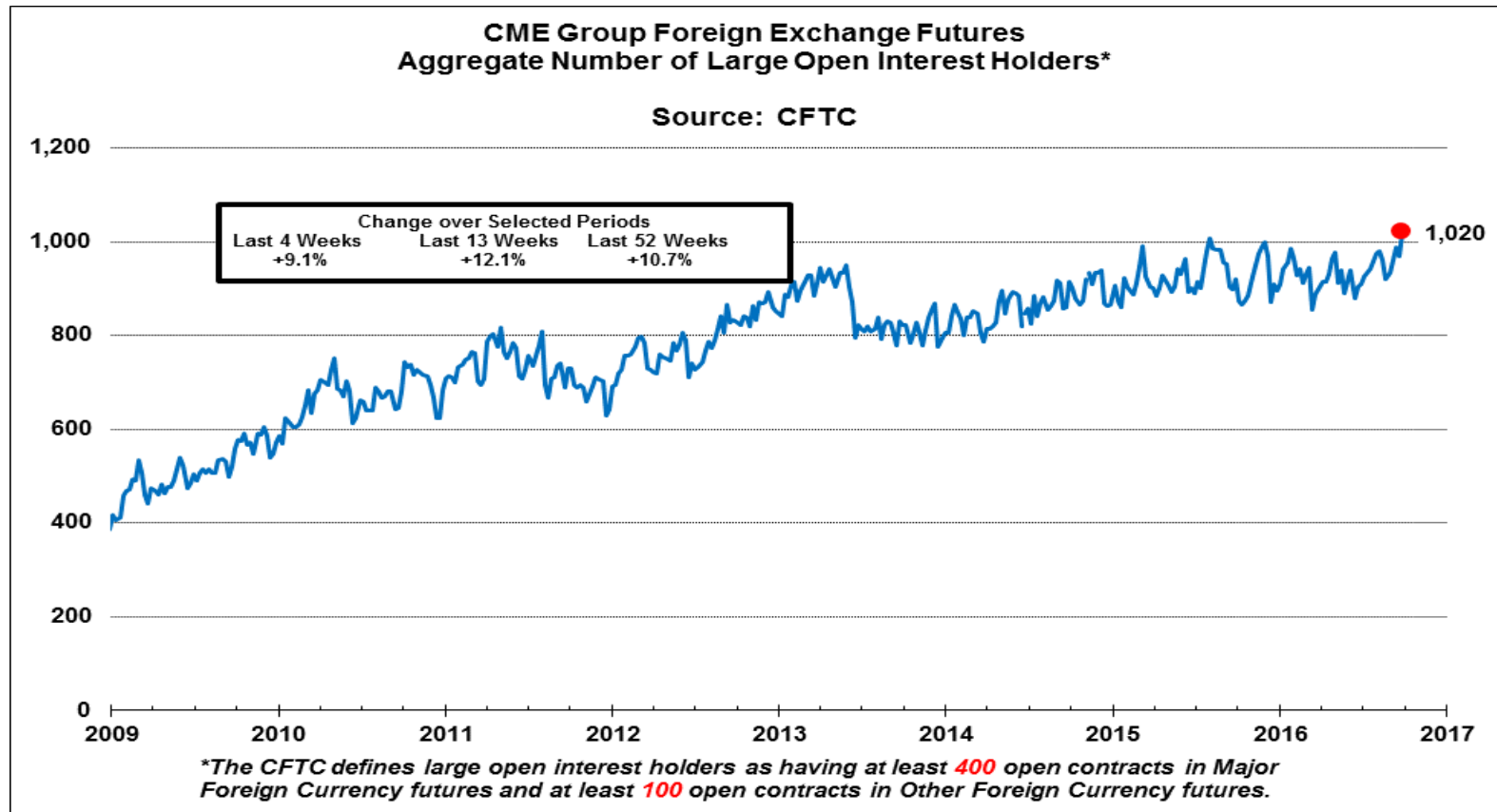
- Clearing Firms create a master account to maintain overall risk administration
- Non-member broker intermediary creates sub-accounts and risk parameters on the sub-account level for customers
- Individual customers of non-member broker intermediary will not be required to register with CME unless they want to take advantage of CME services such as CME STP

Agenda

- EU & International Regulatory Update

- iLink Order Entry-Related Enhancements

- Market Data Changes

- Additional Globex Updates

- Technology Services Update

- **EMEA Regional Update**
  - **FX products**
  - **EU Wheat**
  - **Alumina & Cash Settled Precious Metals Ratio and Spread Futures**
  - **CME Europe**

- Quiz & Q&A

Record levels of large open interest holders in FX

CME Group Foreign Exchange Futures
Aggregate Number of Large Open Interest Holders*

Source: CFTC

Change over Selected Periods
Last 4 Weeks   Last 13 Weeks   Last 52 Weeks
+9.1%   +12.1%   +10.7%

1,020

*The CFTC defines large open interest holders as having at least **400** open contracts in Major Foreign Currency futures and at least **100** open contracts in Other Foreign Currency futures.

CME FX Futures Product Developments - CME Inc.

Volatility-Quoted FX Options - Nov 13, 2016

- Easy for OTC participants to trade CME FX products in a delta neutral way.

- Will improve liquidity and reduce bandwidth usage. Large proportion of OTC FX Options participants prefer quoting in Volatility terms over Premium.

- Designed to interface with the existing premium-quoted flows in order to maximize the total pool of liquidity. Triangulation functionality is targeted for implementation in Q1 2017

OTC FX Options Clearing – Q2 2017

- With the support of dealer the US Clearing House is looking to deploy a cash settled clearing initiative in Q2 2017. This will open up opportunities for the delta hedging via Cash Settled Forwards (Live), FX futures and Rolling Spot. These OTC trades will be cleared and reside in the FX F&O guarantee fund paving the way for margin offsets.

Monthly FX Futures – Jan 23, 2016

- Launching in January 2017 with the first serial listed being the January 2017 contract

- Allows greater flexibility to trade bespoke dates, which enables more accurate hedging of FX exposure.

- Eight monthly contracts will be listed on 12 currency pairs that currently have quarterlies, resulting with one full year of monthly expiries

  AUD, GBP, CAD, EUR, JPY, CHF, NZD, NOK, SEK, EUR/CHF, EUR/GBP, EUR/JPY

Daily Rolling Spot Futures

- Launching on CME Group exchanges (Inc. and Europe) to penetrate OTC market and retail FX with daily spot FX futures. The product will bring to spot market users the advantages of netting and credit, presently enjoyed by listed FX participants in a CCP. Rolling position bring benefits to the users who do not need daily physical delivery.

Volatility-Quoted Options & Triangulation

cmegroup.com/vqo

CME Inc. Continued…

Conversion of American-Style FX Options to European Style

This continues on a roll off roll on basis, new codes for the European style options available.

Bloomberg Dollar Index Futures

CME is partnering with Bloomberg to launch a Futures contract based on the Bloomberg Dollar Spot Index (BBDXY) as a replacement to its existing (and dormant) DowJones CME FX$Index. The new methodology is based on 10 currencies, including 3 EMs, that more adeptly reflect the value of the US$. This new product will build upon Bloomberg strong brand, and a rapidly growing WisdomTree ETF tracking the same Index, which has reached more than $500 million AUM in less than 2 years.

CNH Options

The market for Chinese Renminbi is exploding and CME is very focused on growing its Renminbi product line. CME recently signed a MOU with CFETS and exploring ways to accelerate the use of CNH futures. Participants have expressed strong interest in an option contract to complement the existing CNH futures contract.

INR Options

Spreads on the INR futures have improved considerably after a liquidity drive. The INR options will serve as a proxy for NDF Options that face new capital challenges triggered by Uncleared Margin Rules (UMR).

OTC initiatives

OTC FX Clearing

Live – 12 NDF pairs: USD/BRL, USD/CLP, USD/CNY, USD/COP, USD/IDR, USD/INR, USD/KRW, USD/MYR, USD/PEN, USD/PHP , USD/RUB, USD/TWD

- Full EMTA Template adherence, including primary, secondary and additional fallbacks, in both OTC cleared and CME NDF futures
- HVAR margin- portfolio margining versus Listed FX F&O to be added 2017
- OTC FX guaranty fund sits within F&O pool, requiring no additional contribution to guaranty fund

Live – 26 cash settled forwards offered, settling in a variety of currencies to meet client needs

- Allows participants who don't need delivery to cash settle their trades instead of physically delivering
- Submit trades for any value date out to 2 years
- Currently settled to the 4pm WM/R LDN rate
- Fees currently waived until December 31, 2016

Q2 2017 – OTC FX Options clearing

- Cash Settled against benchmark fixing
- Submit trades for any value date out to 2 years
- Working with dealer community to finalize the structure

EU Wheat

Effective and efficient risk management solutions for participants in the European wheat marketplace

EU Wheat Futures (WEU)

- ADV of 1329

- OI out as far as Dec 2017

- Clients from UK, Germany, France, Singapore, Holland, Norway, Switzerland and many more
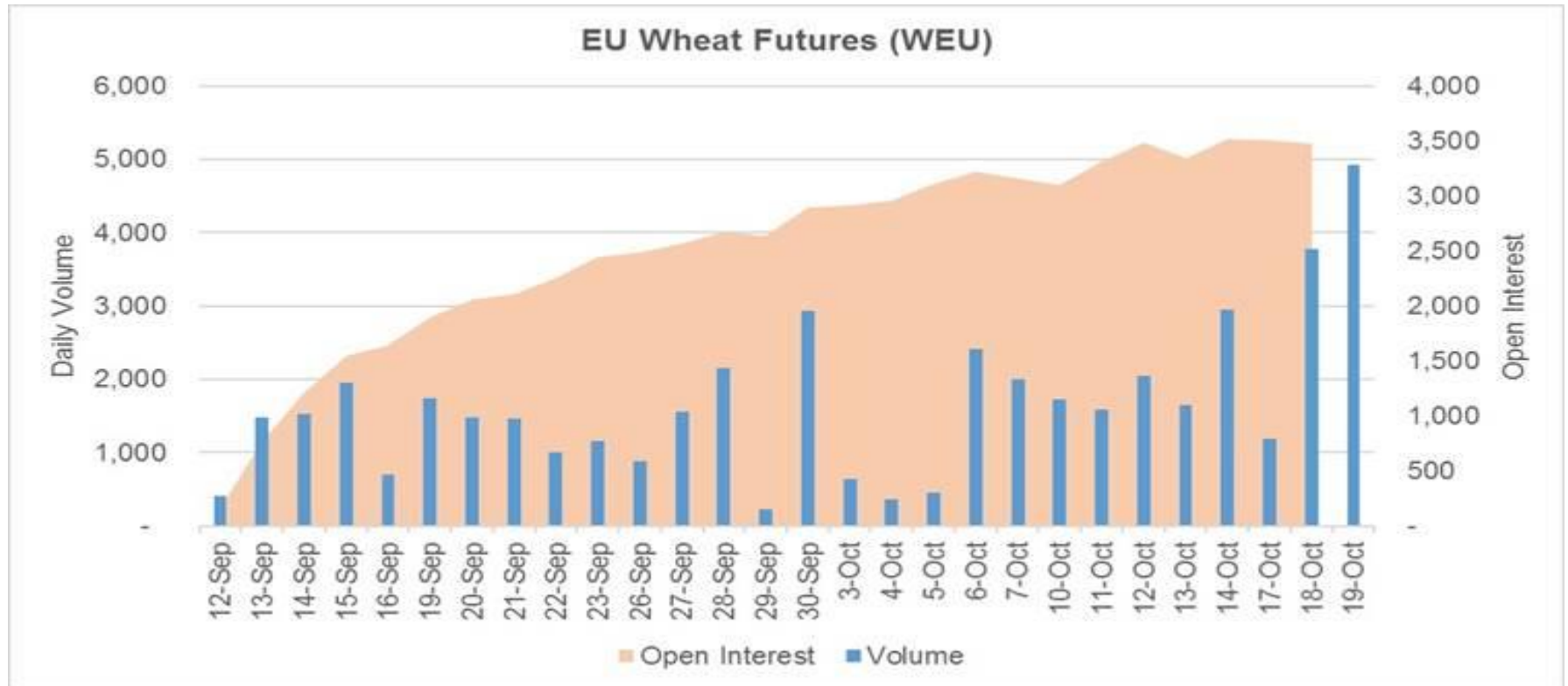
- OI over 3000 lots as per mid October

- 7% market-share of European wheat futures market

Alumina Futures – Launch date 26 September

Contracts	• **Alumina FOB Australia (Metal Bulletin) Futures (ALB)** • **Alumina FOB Australia (Platts) Futures (ALA)**
Rulebook Chapters	• **COMEX 196 (ALB) and COMEX 195 (ALA)**
Settlement Method	• **Financially Settled**
Price Quotation	• **U.S. Dollars and Cents per MT**
Contract Size	• **100 MT (Minimum Price Fluctuation $0.01 / MT)**
Listing Schedule	• **CME Globex and CME ClearPort:** **Monthly contracts for 12 consecutive months**
Termination of Trading	• **The last business day of the contract month**
Minimum Block Size	• **10 Contracts**
Trading Hours	• **Sunday – Friday 6:00 p.m. – 5:00 p.m. (Eastern Time)** **with a 60-minute break each day beginning at 5:00 p.m. (Eastern Time)**
Bloomberg / Thomson Reuters Codes	•**ALB: FALA Comdty / 1BAL,BAL,7BAL** •**ALA: ALAA Comdty / 1AAL,AAL,7AAL**

CME Group

Cash Settled Precious Metals Ratio and Spread Futures

Launch Date October 23rd

Gold/Silver Ratio Futures

- A financially settled product that will provide new trading opportunities based on successful, highly liquid benchmark products. Precious metals market participants, including the OTC and ETF's, currently reference a gold/silver ratio derived from the COMEX Gold and Silver futures. The new contract will allow participants to trade the ratio directly.

Gold/Platinum Spread Futures & Platinum/Palladium Spread Futures

- Both contracts allow participants to access market relevant price differentials using products based on our industry leading benchmark futures contracts. These products are first of their kind and offer unprecedented efficiency, simplicity, and seamless access to popular OTC spreads.
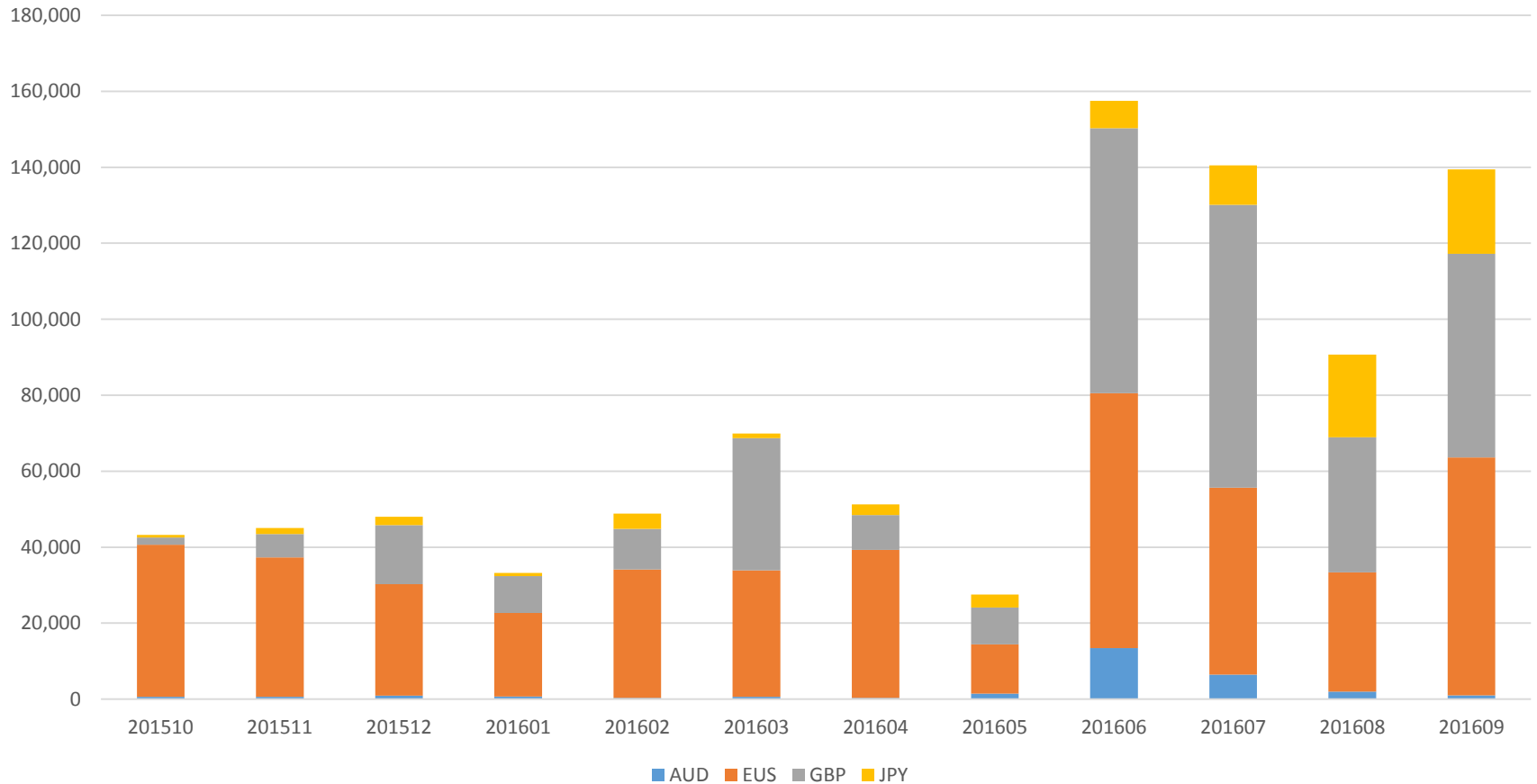
Benefits

- Cash settled
- True intraday price and spread transparency across the futures curve
- Security through centralized clearing, guaranteed counterparty credit and segregation of customer funds through CME Clearing
- Easily accessible electronic execution
- Daily mark-to-market of positions

Product Name	Product Code	Contract size	Minimum Price Fluctuation	Listed Contracts
Gold/Silver Ratio Futures	GSR	$500*Index (GC/SI)	0.05 index points	Monthly contracts listed for nearest two cycle month combinations
Gold/Platinum Spread Futures	GPS	100 troy ounces	$0.10 per troy ounce	
Platinum/Palladium Spread Futures	PPS	100 troy ounces	$0.05 per troy ounce	

CME Europe FX

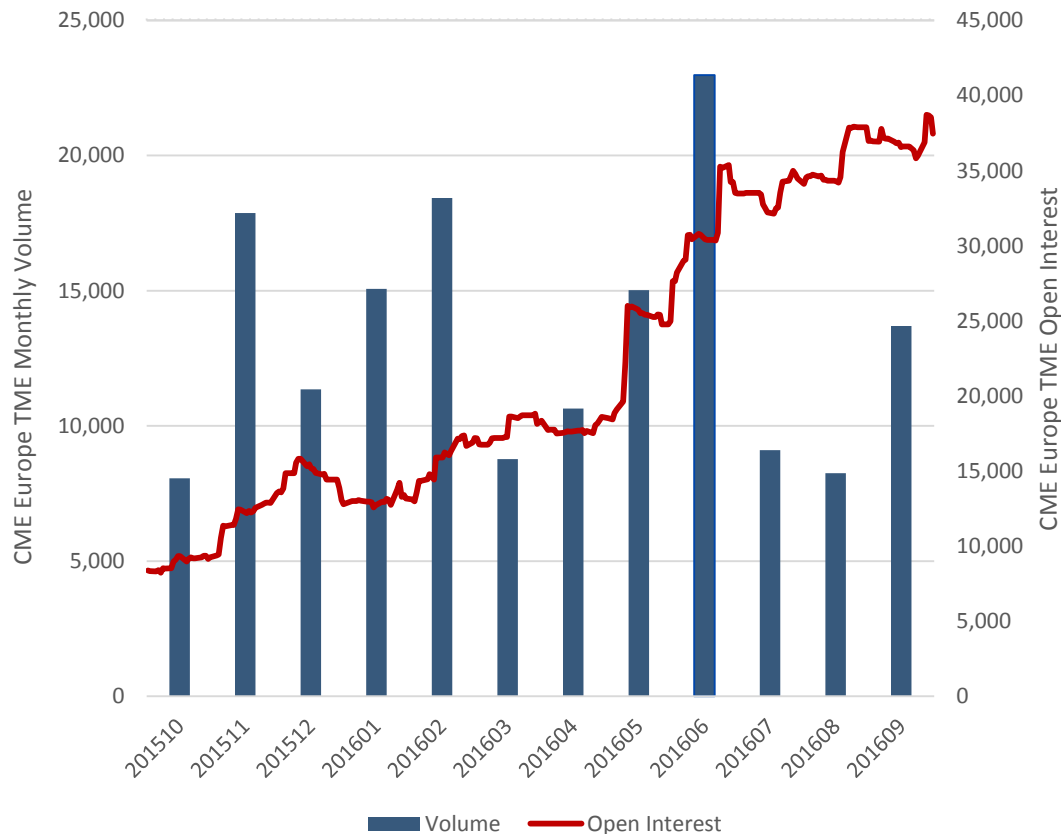## Major liquidity

CME Europe FX Volume

CME Group

CME Europe Energy

Open Interest Growth

CME Europe Dutch Natural Gas YTD

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- **Quiz & Q&A**

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