

© Copyright 2010, The NASDAQ OMX Group, Inc. All rights reserved.

**NASDAQ OMX<sup>®</sup>**

## Expanding Market Infrastructure Through Service Providers

Americas' Central Securities Depositories Association 14<sup>th</sup> General Assembly  
Cartagena, 29 March 2012

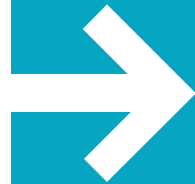
Steve Phillips NASDAQ OMX

Expanding Market  
Infrastructure  
Through Service  
Providers

## **AGENDA**

- Introduction – NASDAQ OMX footprint
- Industry trends in the OTC market
- Infrastructure Requirements and possible solutions

**NASDAQ OMX<sup>®</sup>**



**WHERE INNOVATION MEETS ACTION**

**Fueling the world's economic growth  
one investor, one company, one market  
at a time.**

## GET TO KNOW US

We invented electronic trading 40 years ago and are now the world's largest exchange company.

By operating our own markets and powering customer markets worldwide we are making the world's capital markets move faster, more efficiently and more transparently.

We are a public company listed on NASDAQ and are part of the S&P 500.

We power  
**1 in 10**  
of the world's  
securities  
transactions

NASDAQ OMX  
trading technology is  
used to power  
**more than 70**  
exchanges  
in **50**  
countries

NASDAQ OMX lists  
**3400**  
global companies  
worth \$5.1T in  
market cap  
representing diverse  
industries and many  
of the world's most  
well-known and  
innovative brands

Our global platform  
can handle  
**more than 1M**  
messages/second  
at **sub-80**  
microsecond  
average speeds

We own and  
operate  
**24 markets**  
**3** clearinghouses  
**6** central securities  
depositories

**More than**  
**5500**  
structured products  
with the notional  
value of at least  
**\$957.5B**  
is tied to our  
global indexes

# GLOBAL REACH, LOCAL PRESENCE

## POWERING OVER 70 MARKETS WORLDWIDE\*

The world's number one provider of technology to the exchange industry with over 20 years experience

- 70 exchanges and clearinghouses in 50 countries
- 65 brokers in 35 countries
- 6 regulators in 6 countries

### Key:

(s) Surveillance only

\*List does not include NASDAQ OMX markets

### Asia-Pacific (22)

- ASIC Australia(s)
- ASX Australian Securities Exchange
- Financial & Energy Exchange
- Hong Kong Exchanges and Clearing
- Indian Energy Exchange
- Indonesia Stock Exchange
- Japan Commodity Clearing House
- JapanNext
- Monetary Authority of Singapore (s)
- New Zealand Stock Exchange (s)
- National Stock Exchange
- Osaka Securities Exchange
- Philippine Dealing Exchange
- Port Moresby Stock Exchange
- Securities and Exchange Board of India (s)
- Securities Commission Malaysia (s)
- Securities & Futures Commission Hong Kong (s)
- Singapore Exchange
- South Pacific Stock Exchange
- Stock Exchange of Thailand
- Tokyo Commodity Exchange
- Tokyo Grain Exchange

### Americas (13)

- BATS Exchange (s)
- Bermuda Stock Exchange
- BM&FBovespa (s)
- Bolsa de Valores de Colombia
- Bolsa Electrónica de Chile
- Canadian National Stock Exchange (CNSX)
- FINRA
- ICAP
- ICE US (s)
- IDCG
- IIROC (s)
- North American Derivatives Exchange (s)
- Pure Trading (Part of CNSX)

### Europe (26):

- Aktietorget
- Athens Exchange
- BATS UK (s)
- Budapest Stock Exchange
- EuroTLX
- ICAP (Brokertec Europe)
- ICAP (i-Swap)
- ICE Europe (s)
- Istanbul Stock Exchange
- London Stock Exchange (s)
- Malta Stock Exchange
- MICEX
- N2EX
- Nord Pool Spot
- NYSE Euronext – Amsterdam (s)
- NYSE Euronext – Brussels (s)
- NYSE Euronext – Lisbon (s)
- NYSE Euronext – Paris(s)
- OPCOM/Romanian Power Exchange
- Oslo Børs (s)
- Oslo Clearing
- PFTS
- Polish Power Exchange
- SIX Swiss Exchange
- TOM – The Order Machine
- Zagreb Stock Exchange

### Middle East and Africa (18):

- Abu Dhabi Securities Exchange
- Bahrain Bourse
- Bourse Regionale des Valeurs Mobilieres
- Dubai Financial Market
- The Egyptian Exchange
- Iraq Stock Exchange
- Johannesburg Stock Exchange (s)
- Kuwait Stock Exchange (s)
- Namibia Stock Exchange (s)
- NASDAQ Dubai
- Nigerian Stock Exchange
- Palestine Securities Exchange
- Palestine Capital Markets Authority (s)
- Qatar Exchange
- Saudi Stock Exchange – Tadawul
- Saudi Arabia Capital Markets Authority (s)
- (UAE) Emirates Securities and Commodity Authority (s)
- Southern African Power Pool

# #1 PROVIDER OF TECHNOLOGY TO THE EXCHANGE INDUSTRY

A proven partner in growth.

Over 20 years experience providing technology to the global exchange industry:

- 70 exchanges and clearinghouses in 50 countries
- 6 regulators in 6 countries

Clear differentiation from competitors:

- World leading technology
- Advisory services to help customers drive growth
- Integrates full NASDAQ OMX service portfolio
- Market leader in delivering true market integrity





# TECHNOLOGY IS CORE TO EVERYTHING WE DO

Aggregated technology expertise from NASDAQ OMX markets and customer marketplace & broker solutions.

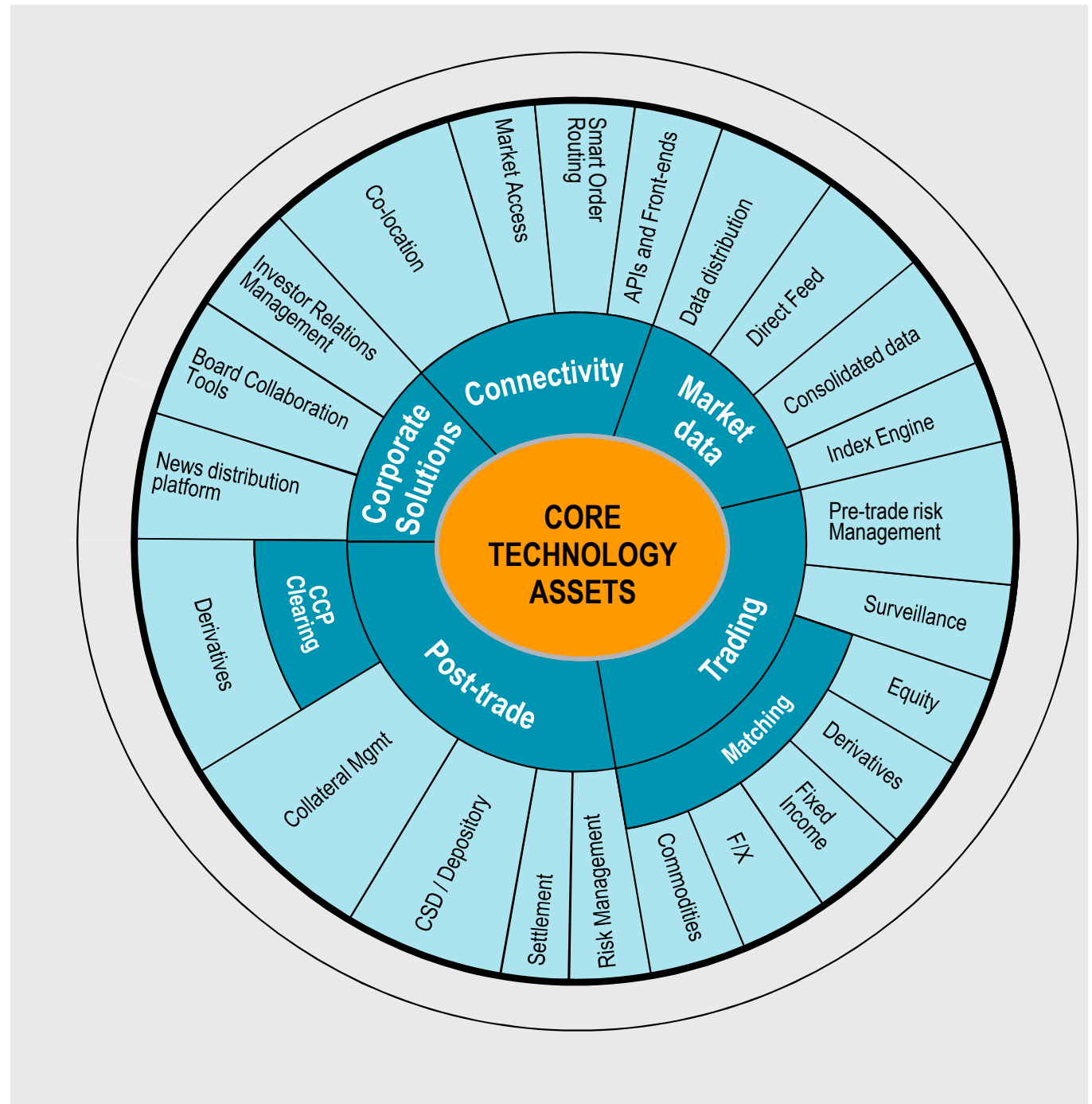
Multi-asset class trading and clearing capability.

Pioneered co-location services.

Patented technology for broker real-time enterprise risk management (FTEN).

Industry benchmark for 15 years, leading market integrity and surveillance solutions (SMARTS).

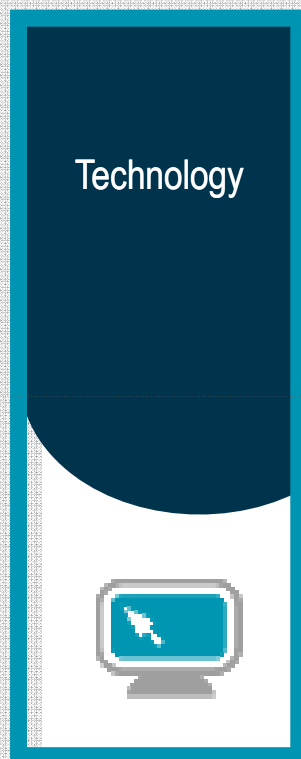
Market Technology offering leveraging the Group's whole range of technology assets and competence.



## GLOBAL LEADERSHIP IN TECHNOLOGY IS A KEY STRATEGIC ASSET

The success we have had in all of our exchange businesses is built from our technology excellence.

We have unique capabilities **unmatched by any exchange in the world.**



All electronic – always.

Fastest and most scalable trading platform on the planet.

World's largest exchange technology provider with over 20 years experience.

Able to trade any and every instrument, faster and at a lower cost than any peer.

Can clear any and every instrument in an efficient, integrated platform.



# NASDAQ OMX CLEARING FOOTPRINT



NASDAQ OMX operates its **own clearing houses** and **provides clearing technology** to market participants around the world

## NASDAQ OMX MARKETS

### Europe

#### NASDAQ OMX Nordic

- Provides clearing for 12 markets in 7 currencies across equities, fixed income and commodities (power and carbon)
- Integrated CCP Clearing of OTC Interest Rate, Equity and Index Derivatives

### US

#### International Derivatives Clearing Group (IDCG)

- CCP clearing of OTC Interest Rate Derivatives

#### NASDAQ OMX Commodities Clearing (NOCC)

- Clearing services for OTC Power and Gas markets

## CUSTOMER MARKETS

ASX - Australia

ASE - Athens Exchange, Greece

HKEX - Hong Kong Exchanges & Clearing

IEX - India

JCCH - Japan

OPCOM – Romania

PolPX – Poland

Oslo Clearing, Norway

SGX, Singapore

JCCH, Japan

TFEx, Thailand

TOCOM, Japan

# INDUSTRY TRENDS IN THE OTC MARKET

© Copyright 2010, The NASDAQ OMX Group, Inc. All rights reserved.



# INTRODUCTION

## OTC INDUSTRY TRENDS

The trading risk ecosystem is facing dramatic changes



- The 2008/2009 global financial crisis demonstrated the financial industry's inadequate risk management and lack of sufficient market transparency
- Regulators have reacted and are imposing new market directives and regulations
- Reluctance for change in the bilateral OTC arena have led to delays of implementing clearing reforms
- The OTC market has complex products that can be difficult to clear
  - Tailor made for specific purposes
  - Inadequate price discovery and price transparency
- Increased awareness to margin requirements by clearinghouse members
- Increase of value added service offerings

# TRENDS AFFECTING THE OTC MARKET

- Regulations allow anyone to offer OTC clearing if they meet the regulatory and technical requirements
- Clearinghouses need to decide how to adapt their services to new regulations or face the risk of competition from domestic as well as international players
- Contracts not centrally cleared will be subject to higher capital requirements

## Legislation and Regulation

- Mandatory trading and/or clearing of selected instruments
- EMIR/MiFID II (Europe)
  - Indicative timetable end of 2012
- Dodd-Frank (US)
  - Indicative timetable Q2 2012
- G20 group
  - Indicative timetable end of 2012

## Clearing trends

- International standards
- Improvement of capital management, cross/asset-class margining
- Increased efficiency through STP
- Asset protection/segregation
- Buy-side access
- New complex and high number of products

## Intensified Competition

- Clearinghouses start to
  - Compete on product scope and distribution channel
  - Offer foreign products to local participants
- Borders and currencies are no longer protected
- Increase the capital efficiency by offering complex cross-margining

## Challenges for the industry:

- To balance increased complexity within the daily business and operations, tougher regulation and an increased global completion
- Provide clients with the most efficient clearing solution from both a technical and capital perspective
- Operate an agile and responsive business that manages to capture the opportunities that will arise in a fast changing landscape

# OTC CLEARING REQUIREMENTS

*Traditional systems for exchange traded instruments do not support the complexity of OTC products*

Key Requirements	Solution
<b>Safeguard the CCP integrity</b>	<ul style="list-style-type: none"><li>• Default management capability which includes support for the auctioning process ensures member defaults to be safely managed in stressed markets,</li><li>• Stress testing Guarantee Fund adequacy in various market conditions</li></ul>
<b>Efficient management of capital</b>	<ul style="list-style-type: none"><li>• Structured products gives capability to efficiently clear various asset classes and complex derivatives,</li><li>• A streamlined workflow and automation of limit settings support business growth with the increased operational efficiency</li></ul>
<b>Counterparty risk control</b>	<ul style="list-style-type: none"><li>• Real-time risk information enables the CCP to protect the integrity of the clearing house and its' members,</li><li>• Enterprise-level risk management enables an overview of the total risk environment for the clearing house including all markets and asset classes</li><li>• Risk technology that supports revenue growth rather than a bottleneck in offering new services</li></ul>

# NASDAQ OMX SOLUTIONS

© Copyright 2010, The NASDAQ OMX Group, Inc. All rights reserved.

**NASDAQ OMX<sup>®</sup>**



# INTRODUCING X-STREAM CSD

Designed to fit current as well as future needs

X-stream CSD represents a consolidated product portfolio combining the best features of Exigo and Equator

Conforms with international best practices



- Post-trade integration between CCP Clearing and CSD
- Open, sharable Clearing/CSD APIs (e.g. common SWIFT gateway)
- Aligned with our core technical strategy, representing a significant reduction in TCO
  
- Commodity hardware and technology infrastructure
  - High Availability
  - Designed for change
  - High Capacity
  - High Scalability
  - No Single Point of failure
  - Modularized, Maintainable, Adaptable
  - Handle large transaction volumes and data
  - Easy to scale HW when business grows
  
- Functional highlights
  - ✓ Multi asset and settlement support equity, fixed income
  - ✓ Improved connectivity, ISO15022/SWIFT
  - ✓ Secure access including audit trails, user roles, dual control etc
  - ✓ Rich corporate action and custody support

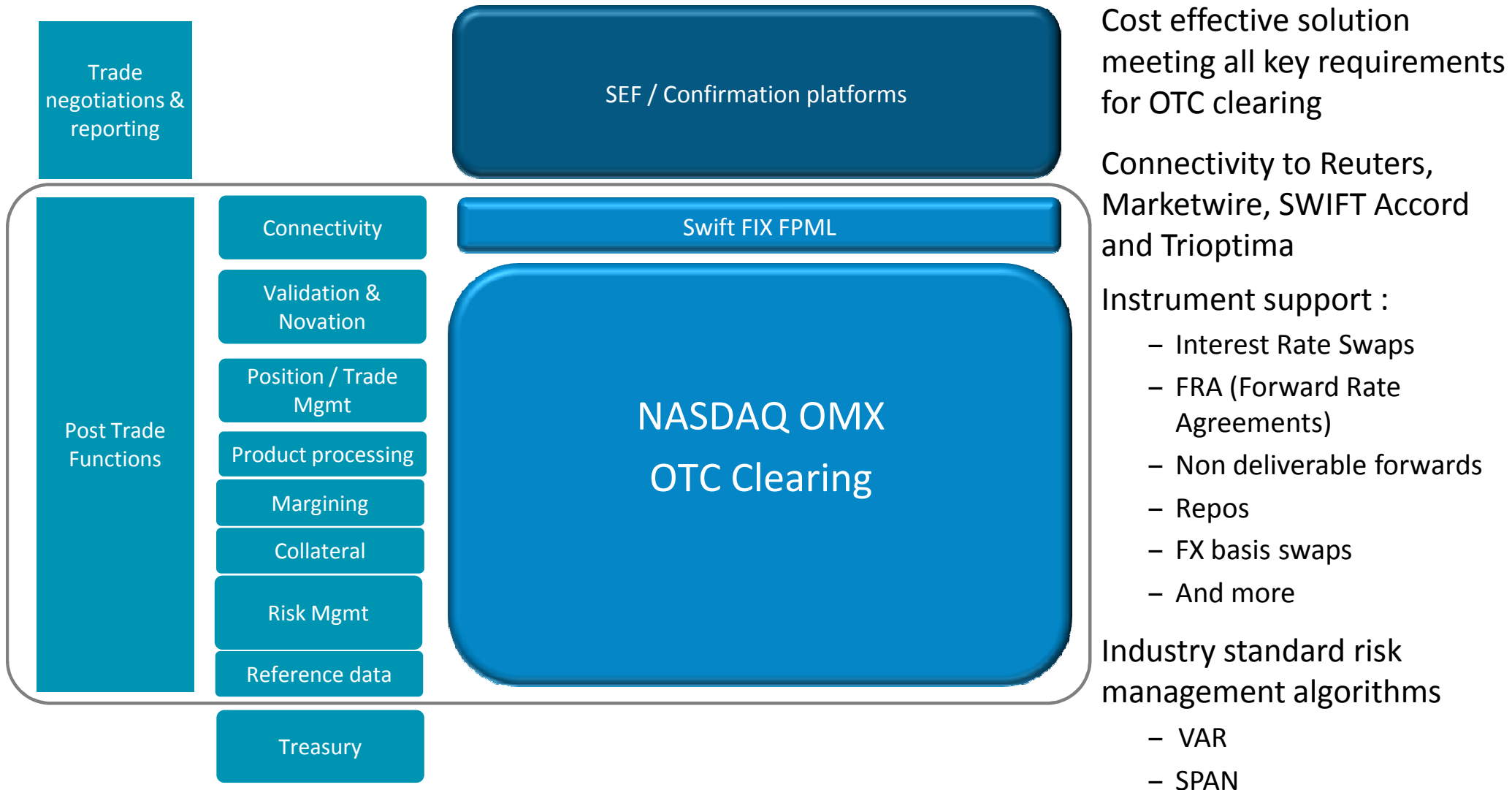
# INTRODUCING NASDAQ OMX OTC CLEARING

NASDAQ OMX offers a comprehensive OTC Clearing solution including advanced risk management and margin calculation that meet today's needs of CCPs, exchanges and SEFs/OTFs

Provided as a stand-alone OTC Clearing solution or integrated with clearing of exchange traded products

- NASDAQ OMX OTC Clearing is designed to meet today's OTC trade and risk management requirements of any clearing house
  - The solution addresses sophisticated requirements as well as traditional CCP risk management functionality
  - Robust solution with wide functional coverage, required process support and industry leading technology
- Fully compliant with the planned global regulatory revamp
  - Wide OTC product coverage and their life cycle processing
  - Real-time pricing, margin calculation and limit processing
  - Configurable validations before novation (ISDA definitions, Risk, Limits, etc.)
  - Real time trade and position management (terminations, give up, transfers, postings, etc.)
  - Member default management
  - Flexible and comprehensive account structure (supporting end clients)
- Configurable connectivity through open API architecture
  - Trading venues and other interfacing solutions
  - Supports full STP
- Can be offered stand-alone or integrated with an existing clearing system

# NASDAQ OMX OTC CLEARING OFFERING



# WHY CHOOSE NASDAQ OMX AS YOUR CLEARING SOLUTION PROVIDER?



- Extensive expertise in delivering CSD and clearing systems to CSDs and clearinghouses covering both exchange traded instruments as well as OTC derivatives
- Support for workflow handling and complex life cycle of processing
- Compliant to OTC market global standards
- Real time margining engine and limit monitoring
- Modular solution enables clients to preserve their investment in existing infrastructure
- Support for complete default management waterfall
- Consolidation of risk across OTC and Listed products if required
- API and standard protocols to support member Back Office processing (workflow, collateral, settlement instructions, reports, etc.)
- In production at NASDAQ OMX and many other global customers which adds extensive clearing and business expertise (Nordic exchange, IDCG, KDPW)

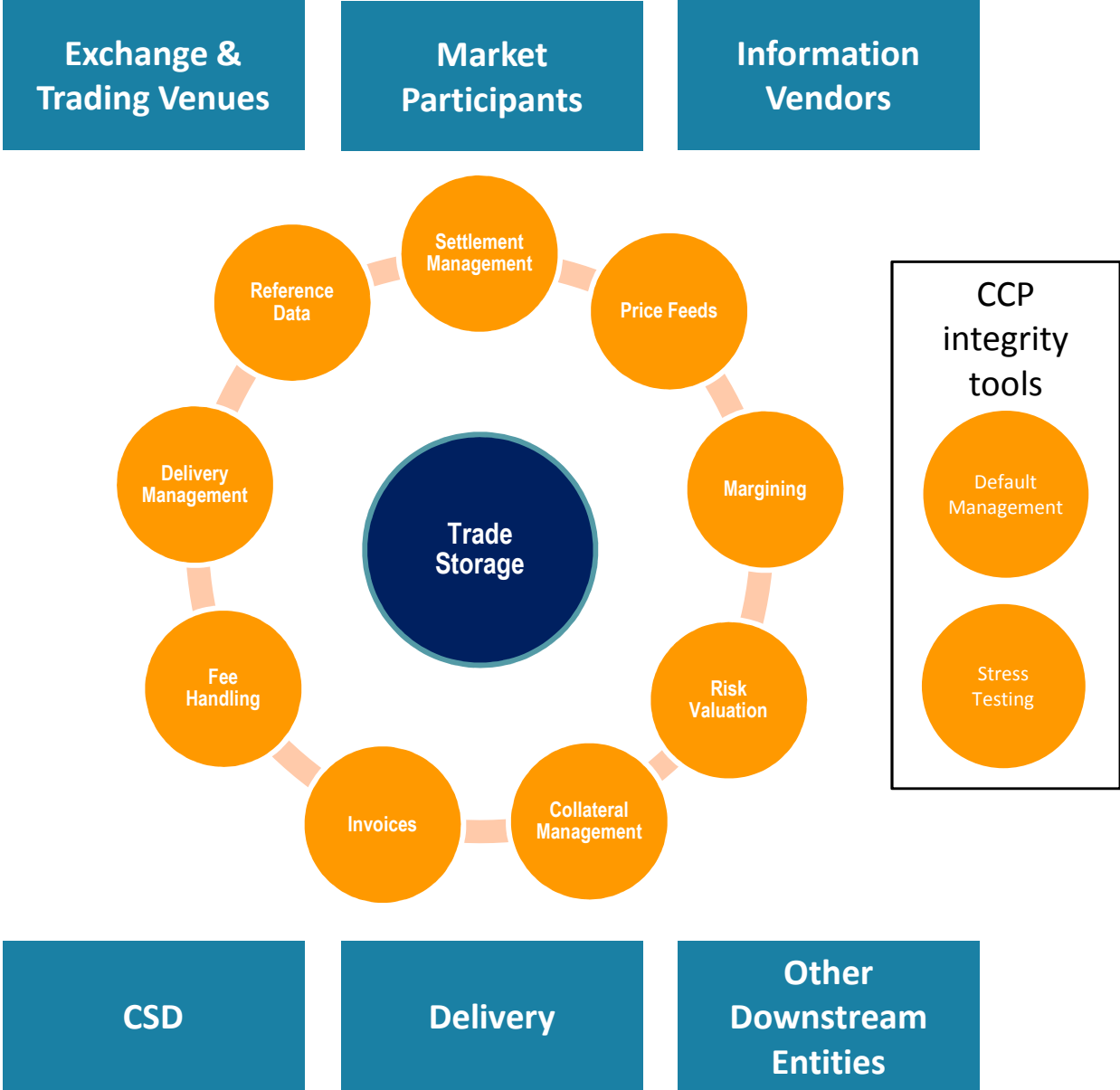
# FUNCTIONAL DESCRIPTION OTC CLEARING

© Copyright 2010, The NASDAQ OMX Group, Inc. All rights reserved.



# NASDAQ OMX OTC CLEARING SOLUTION – FUNCTIONAL MAP

- Comprehensive clearing functionality
- Sophisticated account model supporting alternative clearing relations
- Margining and cash flow calculations
- Consolidation of risk and settlement values for OTC trades
- Supplementary services such as fee handling and invoicing
- Standardized interfaces to external entities





# OTC CLEARING RISK MANAGEMENT FUNDAMENTALS

The OTC Clearing solution architecture has been designed to fully address seven risk management fundamentals - all essential for effective OTC Clearing

Risk Fundamental	Description	
Visibility	Clear and visible information across the organization	✓
Adaptability	OTC Clearing best practices are evolving in response to industry and regulatory changes	✓
Holistic	A holistic view of information across the enterprise, across multiple systems using different methodologies. Risk management should not be done in silos	✓
Real-Time	Manage risks when they occur rather than after an event	✓
Resilience	Risk must be managed on a 24/7 basis	✓
Defensive	Risk management must be defensive with multiple safeguards in place to prevent risk going undetected or not being acted upon appropriately	✓
Control	Risk management needs extensive and precise default management handling	✓

# ARCHITECTURAL DESCRIPTION OTC CLEARING

© Copyright 2010, The NASDAQ OMX Group, Inc. All rights reserved.

**NASDAQ OMX**<sup>®</sup>

# ARCHITECTURAL CAPABILITIES

- ✓ Flexible
- ✓ Efficient
- ✓ Modular
- ✓ Minimize Total Cost of Ownership
- ✓ Standards

Configurable and extendible functionalities without need for software changes

- Manage configuration changes via GUIs in a secure and audited environment

Loosely coupled architecture in support of modular upgrades to reduce time and cost for customization, deployment, and testing

Focus on low total cost of ownership

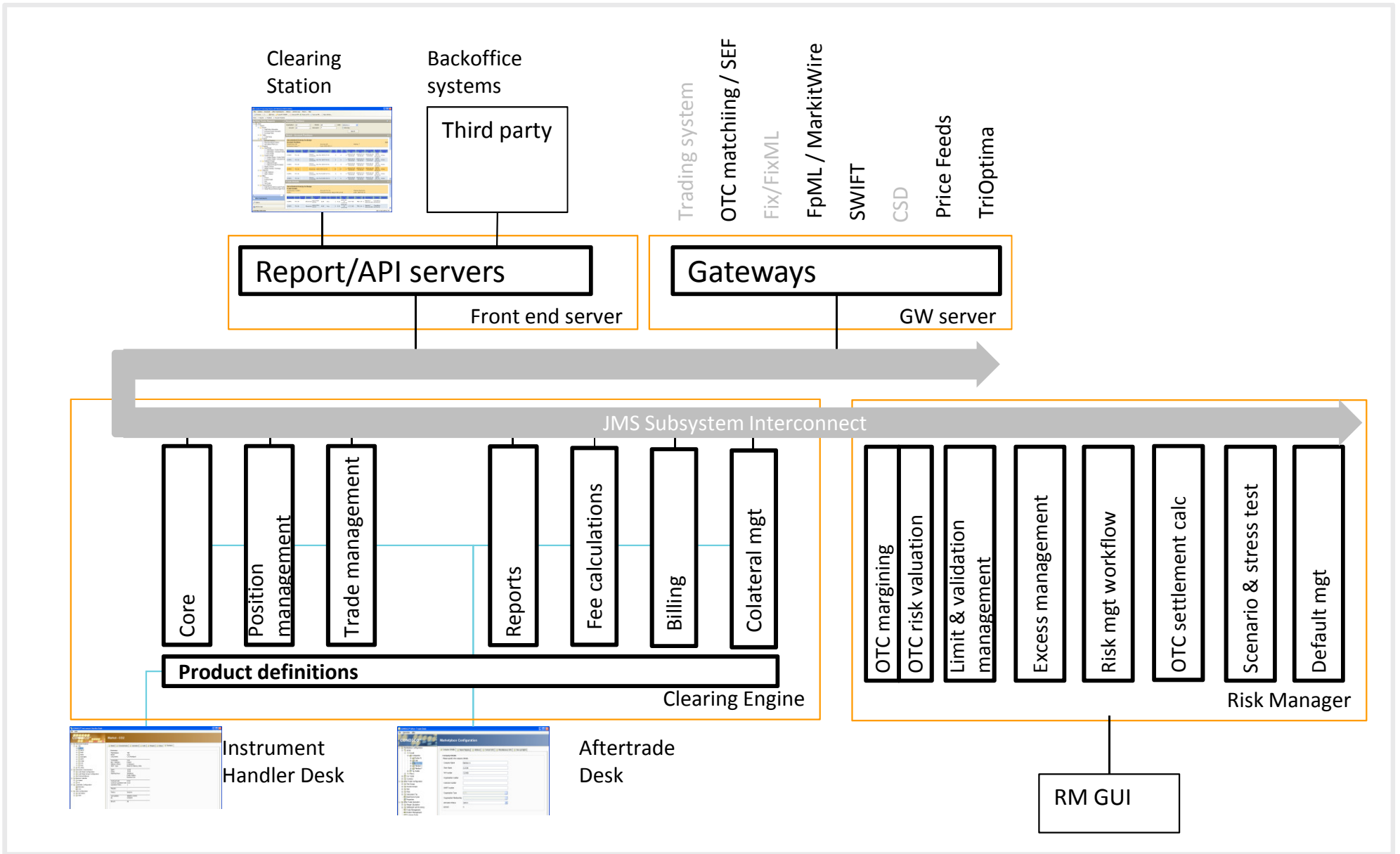
- Low cost deployment projects
- Use of commodity hardware and open source software to reduce investment costs

Adherence to standards in the OTC community to simplify integration

Workflow for business process configuration and exception handling

Operational efficiency – easy to manage and monitor - logging, supervision, etc.

# MODULAR ARCHITECTURE OTC CLEARING SOLUTION



## SUMMARY

NASDAQ OMX has proven experience and market expertise in OTC clearing gained from operating marketplaces, clearing houses and as a global clearing and risk management technology vendor

- High Performance Margin Calculation Facility
- Leading CDS Market Solution
- Transparent Calculations and Methodology
- Highest Degree of STP
- Secure Data and Processing
- Open Architecture and industry leading Technology

# LOCATIONS

## Asia-Pacific

Beijing, China

Hong Kong

Singapore

Sydney, Australia

Tokyo, Japan

## Europe

Copenhagen, Denmark

Helsinki, Finland

London, England

Lysaker, Norway

Milan, Italy

Oslo, Norway

Reykjavik, Iceland

Riga, Latvia

Stockholm, Sweden

Tallinn, Estonia

Vilnius, Lithuania

Yerevan, Armenia

## Middle East

Dubai, UAE

Palm Jumeirah, UAE

## North America

Boston, MA

Calgary, Canada

Chicago, IL

Denver, CO

Eugene, OR

Houston, TX

Lakewood, CO

Los Angeles, CA

Maynard, MA

Menlo Park, CA

Philadelphia, PA

Rockville, MD

San Francisco, CA

Shelton, CT

Washington, DC



## Corporate Headquarters

One Liberty Plaza

165 Broadway

New York, NY 10006

Tel: +1 212 231 5358

## NASDAQ MarketSite

4 Times Square

43rd & Broadway

New York, NY 10036

[www.nasdaqomx.com](http://www.nasdaqomx.com)