



OSLO BØRS VPS



*Strategic partnership Oslo Børs and  
London Stock Exchange Group*

*Migration of trading systems 2009-2010*

Oslo 2 September 2009

# *Content*

- The strategic partnership
- Project timelines
- Market model and functionality – cash equities and fixed income
- Technical overview
- Customer testing
- Consultation member rules
- Introduction of CCP for equity trading
- Exchange Hosting service



# ***The strategic partnership***

*Anders Brodin, Deputy CEO Oslo Børs*

# *Strategic partnership with the London Stock Exchange Group*

What?

Covering

- Cash equities
- Fixed income
- Derivatives

Why?

- To benefit customers of both exchanges by creating new investment and trading opportunities
- Respects and supports organisational independence

How?

- First step: Oslo Børs migrate to LSEGs trading systems
- Lays groundwork for wider collaboration on extending existing products and services to each others customers

# ***Project timelines***

# *The migration of derivatives to SOLA*

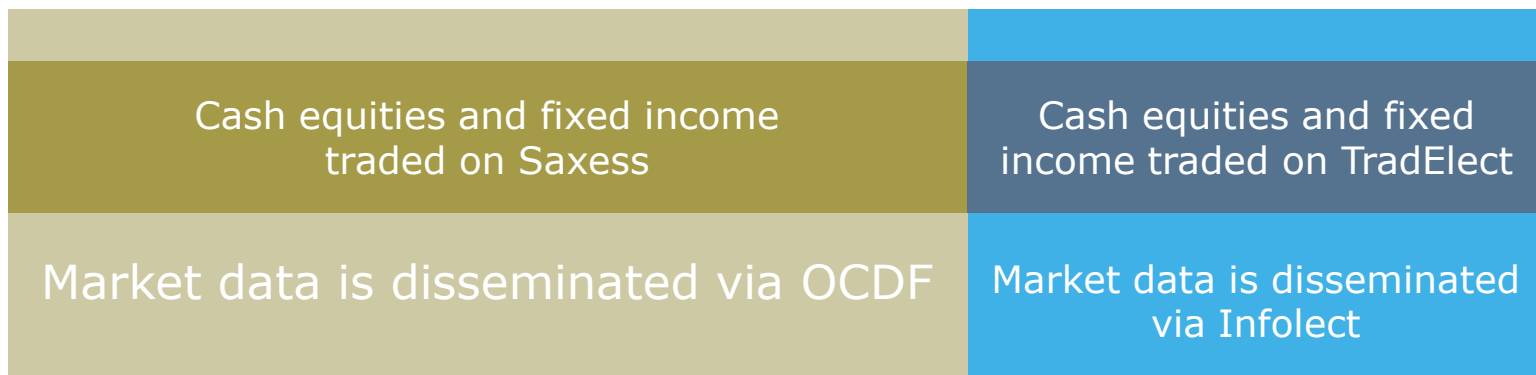
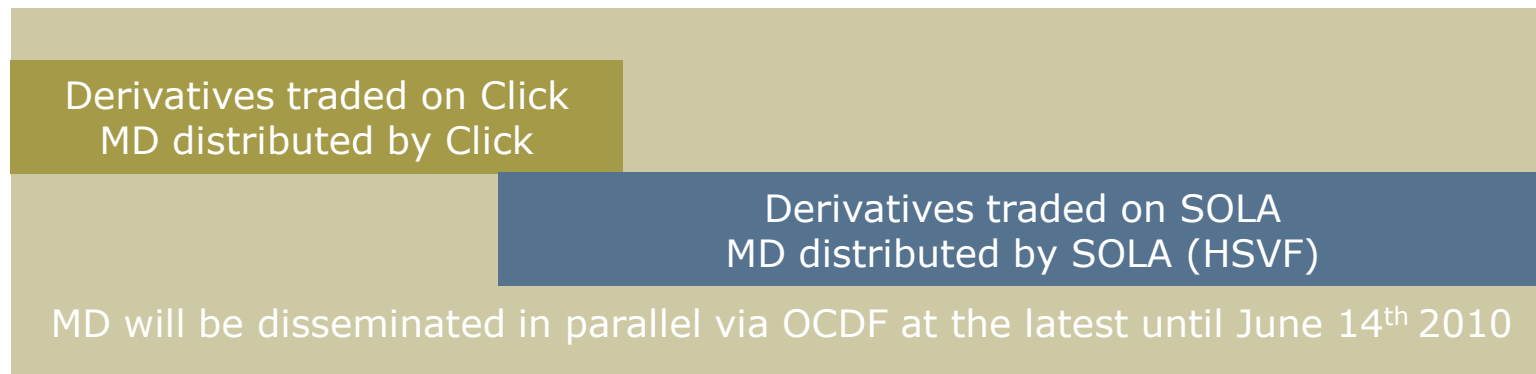
Month	Key activities
August	Testing Documentation CDS & Conformance Tests
September	Dress Rehearsal & Go-Live Guide
October	Dress Rehearsals on 17/10 and 31/10
November	Dress Rehearsal on 7/11. Go-live 16/11
	All key activity dates are indicative

## *Time schedule TradElect and Infolect*

Year	Month	Activity
2009	June	Market model finalised
	August	Upgraded communication network available for all customers
	17 August	Oslo Børs Service and Technical Description issued
	7 Sept	Customer Testing Service go-live with Oslo Børs market models (DCS and FIX5.0 online conformance test tool)
	7 Sept	Customer Testing Guide issued
	16 Sept	Conformance Testing Service go-live. Conformance testing must be completed by 12 December
	30 Sept	Consultations on trading and member rules for cash equities and fixed income to be distributed
	30 November	Dress Rehearsal Guide issued
	12 December	First mandatory weekend dress rehearsal
2010	January	Trading and member rules finalised
	16 January	Second mandatory weekend dress rehearsal
	30 January	Third mandatory dress rehearsal (if required, subject to customer readiness)
	15 February	GO-LIVE

**Time schedule is subject to client readiness**

## *Future dissemination of market data*



## External Communication

- Updated information material is found on



- Newsletter 3/2009 to be published 9 September
- Our Technical service desk is open from 8:00 to 16:00 CET:
  - E-mail [technicalsupport@oslobors.no](mailto:technicalsupport@oslobors.no)
  - Tel +47 2234 1818
- Further group meetings and 1:1 meetings will be organised on a frequent basis

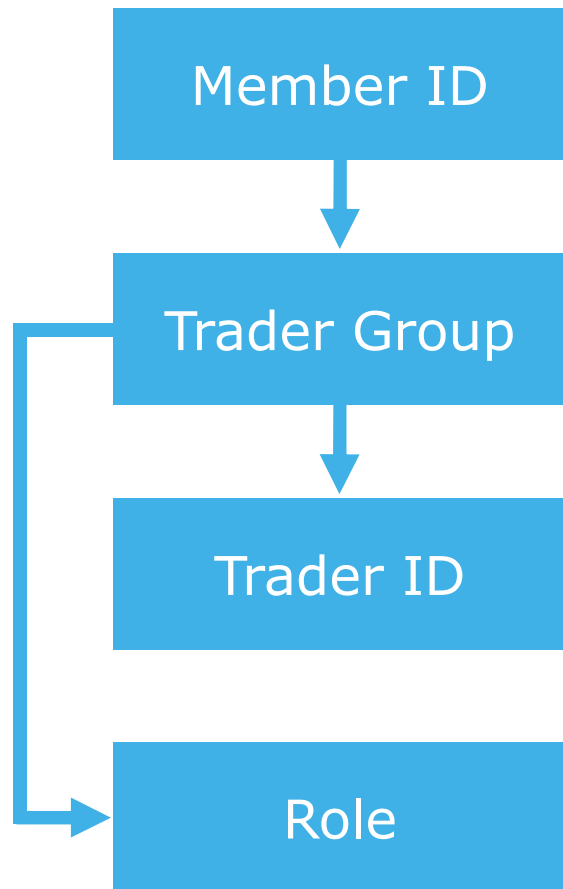
# ***Market model & functionality***

## ***Cash equities and fixed income***

*Knut Jakhelln, Adviser Oslo Børs*

*Bodil Østby, VP Fixed Income Oslo Børs*

## *Participant structure*



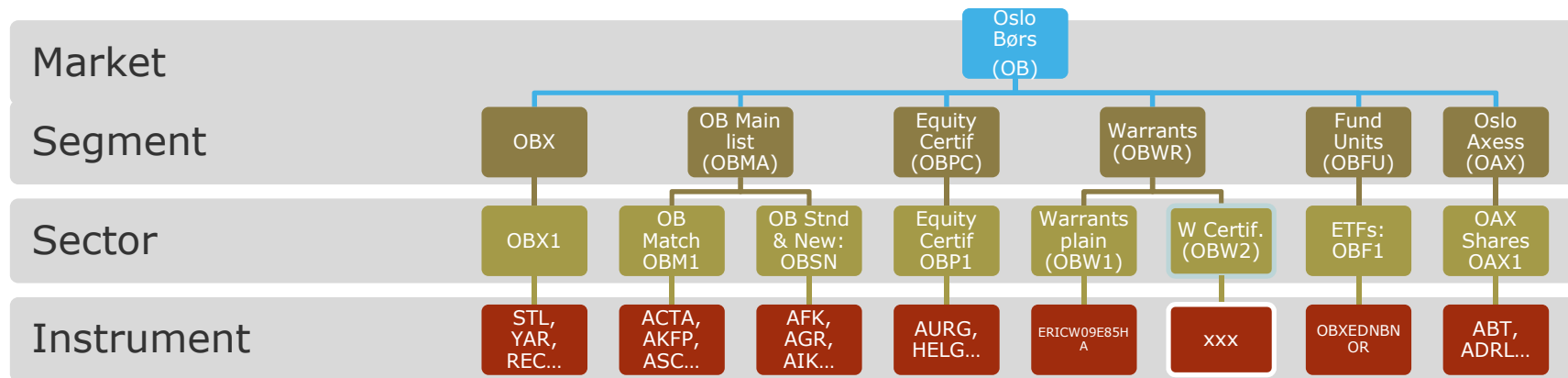
Each member will be assigned a unique Oslo Børs specific Member ID

- All authorisations are set at this level
- Each member will have to set up their own structure to suit own needs
- Special groups for AOR, Algo trading, Manual trading and DMA-trading are required

This field is optional

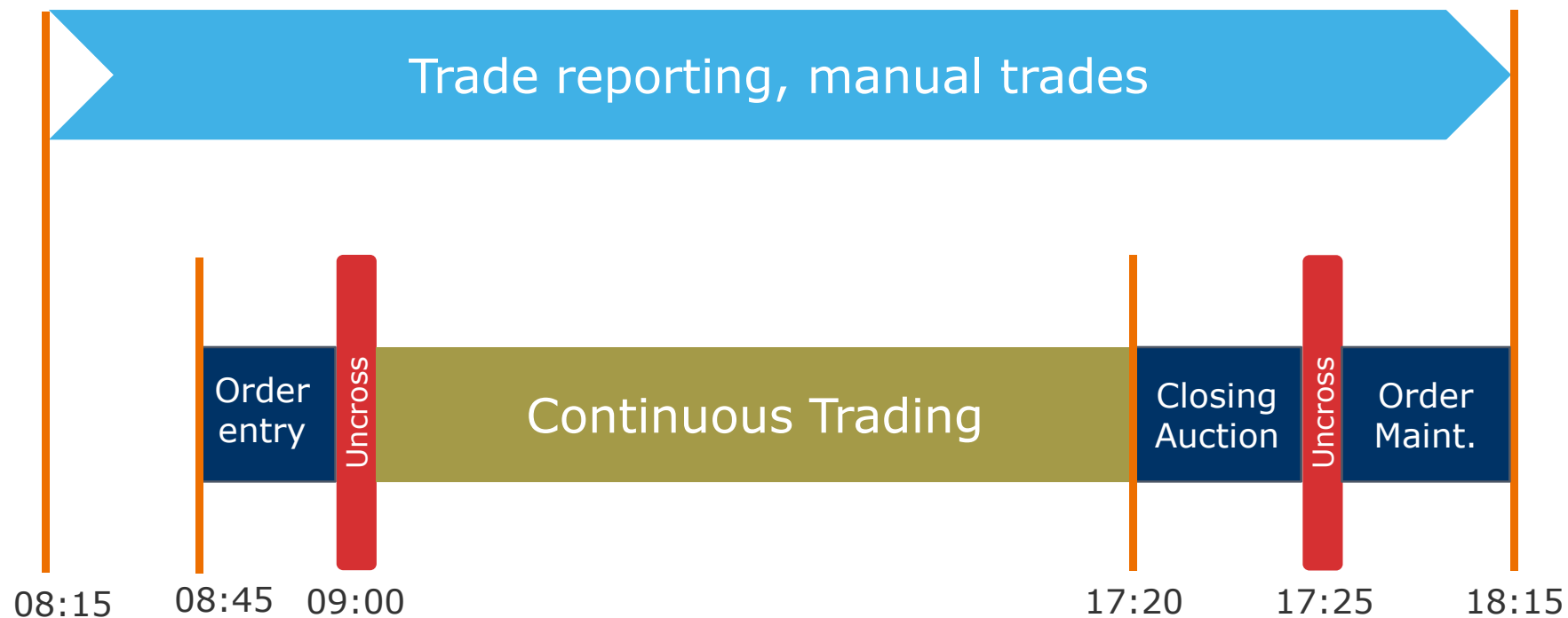
Set at Segment level; e.g. report trade, insert order etc. Applies to Trader Group

# Market Model – Cash Equities



- Name changes:
  - Primary Capital Certificates -> Equity Certificates
  - Sector Fund Units -> ETFs
- New sector in Warrants segment

# The Trading Day - Cash Equities



All times are in CET

# *Oslo Børs' Market Configuration*

- Post trade visibility for all shares, warrants and ETFs
  - Note: Following an uncross, all individual uncrossing trades will be published, including Member IDs
- Minimum Peak Size (Iceberg orders)
  - Minimum peak size for OBX shares = 1xEMS approx NOK 500 000
  - Minimum peak size for other shares = 1xEMS approx NOK 200 000
  - EMS sizes will be reviewed quarterly
- Removal of named order functionality

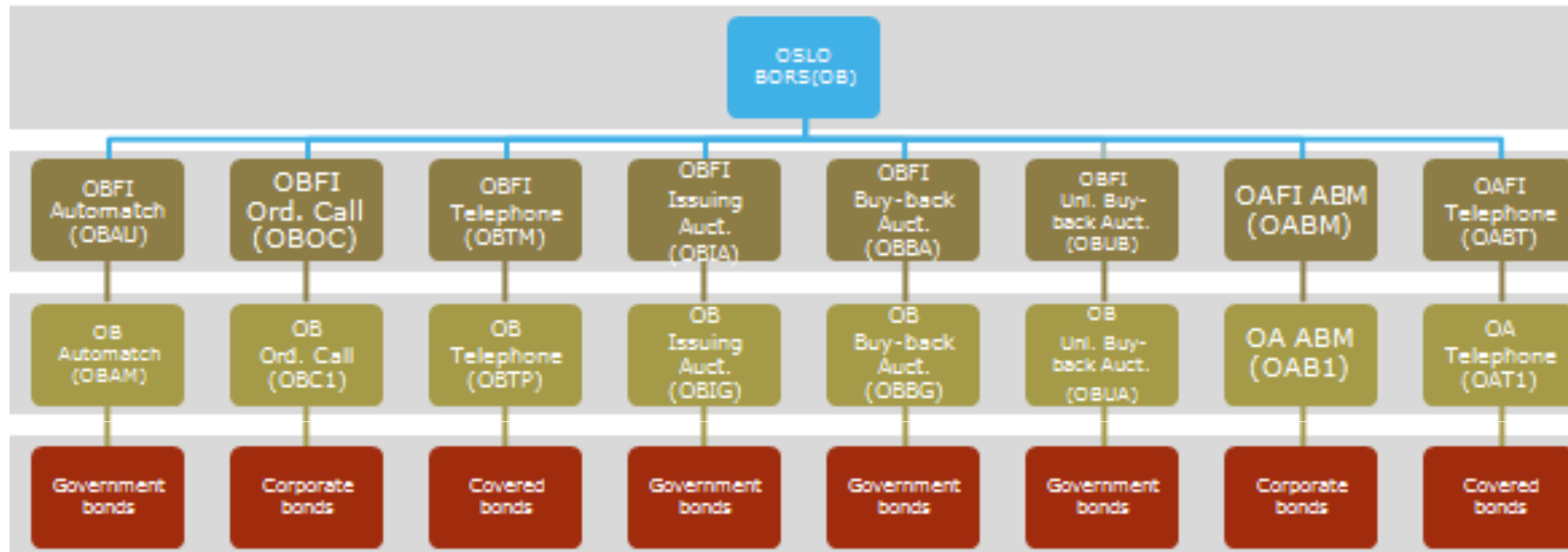
## *Other changes to previously announced Market Model*

- New tick size table implemented for OBX 31 Aug 2009
  - The new table will be included in TradElect
- "Fat Finger Control":
  - General rule: +/- 50% from Static Reference Price
- Changes to trade types: See following slide

# Trade Types - Equities

Trade Type	Name	Venue	Orderbook or Manual	Publish	Segments OBX, OBMA, OBPC, OAX	Segments OBFU, OBWR
AT	Automatic trade	XOSL/ XOAS(*)	Orderbook	Immediate	Y	Y
UT	Uncrossing trade	XOSL/ XOAS(*)	Orderbook	Immediate	Y	Y
NT	Negotiated trade	XOSL/ XOAS(*)	Manual	Immediate	Y	
NK	Negotiated trade – delayed publ. requested	XOSL/ XOAS(*)	Manual	Delayed if meets size requirement	Y	
O	Ordinary trade	XOSL/ XOAS(*)	Manual	Immediate	Y	Y
OK	Ordinary trade – delayed publ. requested	XOSL/ XOAS(*)	Manual	Delayed if meets size requirement	Y	
NM	Not to Mark	XOSL/ XOAS(*)	Manual	No	Y	Y
DT	Derivative Related	XOSL/ XOAS(*)	Manual	Immediate	Y	
VW	VWAP Trade	XOSL/ XOAS(*)	Manual	Immediate	Y	
OT	OTC trade	XOFF	Manual	Immediate	Y	
TK	OTC trade – delayed publ. requested	XOFF	Manual	Delayed if meets size requirement	Y	
SI	SI Trade	SI	Manual	Immediate	Y	
SK	SI Trade – delayed publ. requested	SI	Manual	Delayed if meets size requirement	Y	

# Market model - Fixed Income



- Existing repo-submarkets and bulletin board submarket will be discontinued
- ABM Professional and ABM Retail will be consolidated into one common segment, tickers will reflect the differences
- All repos should be reported in the main segment for the particular ISIN
- No odd lot match – but odd lot reporting available

# *Amendments made since consultation paper – Fixed Income*

- Trades:
  - Reporting of manual trades will end at 16:00
  - Trades may only be cancelled intra-day
  - Trade types will be used to distinguish between immediate vs delayed publication of trades
- Orders:
  - Hidden orders will not be implemented (icebergs will be allowed in automatch-segment)
- Issuing and buy back auctions
  - Allocation on issuing auctions will be performed at 11:10

# ***Consultation on Member Rules***

*Bodil Østby, VP Fixed Income Oslo Børs*

## *Proposed changes to member rules*

- Trader authorization to be removed
- Obligation to reveal traders' identity on request
- Oslo Børs membership will cover both the Oslo Børs and the Oslo Axess markets
- Three months notice in case of cancellation of membership
- Settlement rules to be distributed as a pre-consultation to Oslo Clearing member rules consultation group

# ***Technical overview***

*Ernst Rolf von Düring, Test Coordinator Oslo Børs*

## *TradElect Drop Copy (Copy To) functionality*

- **The TradElect Drop Copy (Copy To) functionality is interface specific**
- Messages sent on the FIX 5.0 interface cannot be 'Drop Copied' to the native interface and vice versa.
- We advise our members/ISVs to take this into consideration when designing trading client setup and/or back-office solutions

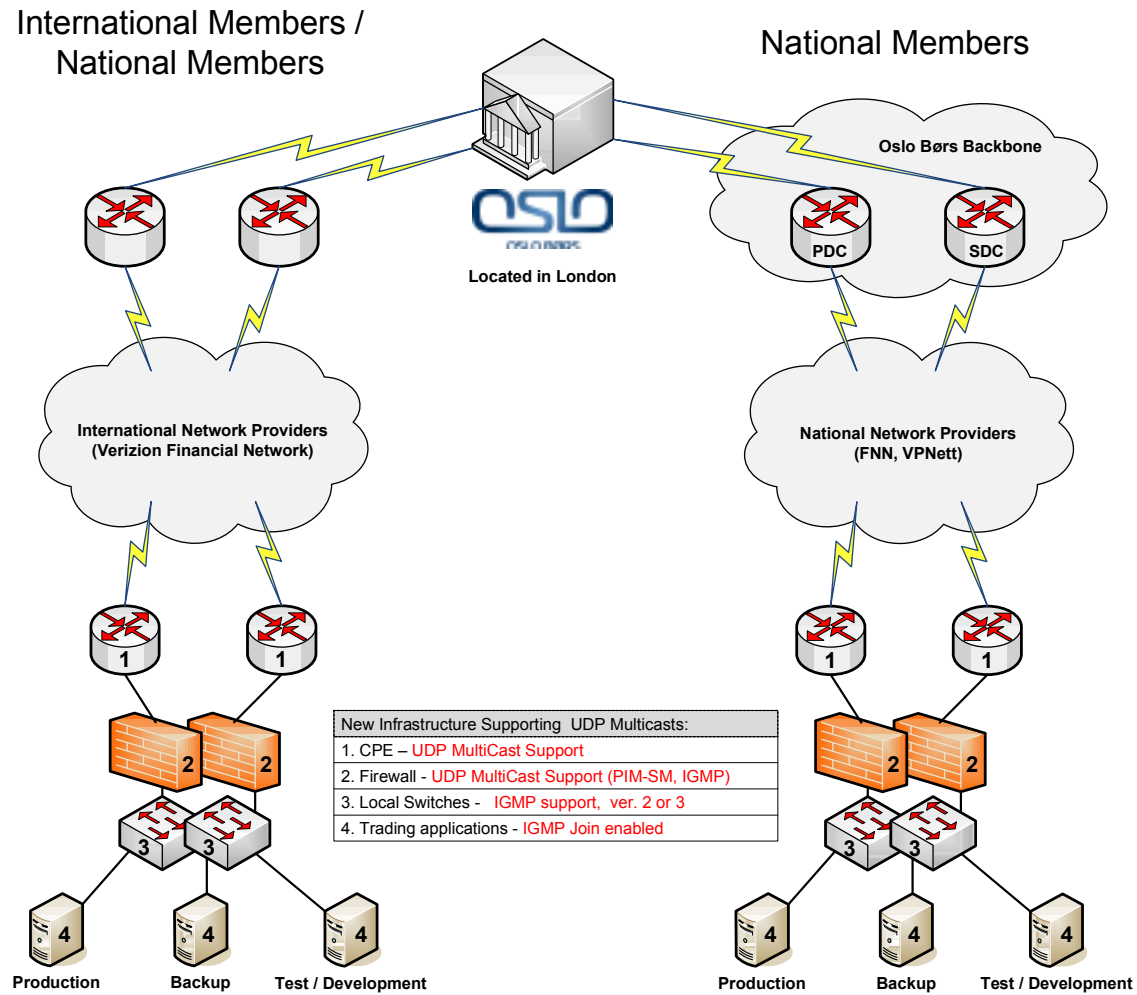
## *Technical specifications*

- Overall, technical specifications for TradElect/Infolect also apply for Oslo Børs' markets
- "Guide to the FIX 5.0 Interface to TradElect" (Jan 2009)
- "Network structure for integration with TradElect og SOLA" (22 June 2009)
- Changes made for Oslo Børs are described in the document "Service and Technical description – Oslo Børs cash equity and fixed income migration to TradElect" (17 Aug 2009)
- IP addresses etc. for CDS environment will be described in "Customer Test Guide" (7 September 2009)
  - Also in "Customer Enablement Information Form" (CEIF)
- IP addresses etc. for production environment will be described in "Dress Rehearsal Guide" (30 November 2009)

# *Oslo Børs Cash Equity and Fixed Income Migration to TradElect*

- General
  - Own Order Preferencing
  - New 5LL 'Trade High Low Last' message and VWAP processing
  - New 5OZ 'Trade Report' message
  - New 5BN 'Broadcast Notification' message
- Fixed income only
  - Dynamic Prorata Reallocation
  - Named Iceberg Orders
  - Bond calculations
  - Bond Repurchase (REPO) Agreements
- Infolect
  - News and Index messages
  - Oslo Børs Service Channels

# Communication Networks



# *Customer technical readiness*

- Network connections
  - Existing FNN and VPNett networks are being upgraded and equipment replaced
  - VFN replacement for OMNet for other nordic customers
  - Existing Extranex bandwidth is expected to be sufficient
- Trading interfaces
  - Both FIX 5.0 and TradElect Native (fixed width) interfaces supported
- Information interface
  - New Service Channels introduced supporting Oslo Equity and Fixed Income markets on Infolect
  - Prepare internally for UDP multicast
- Work flow
  - Integrate with post-trade functionality and services

# ***Customer testing***

## ***TradElect & Infolect***

*Ernst Rolf von Düring, Test Coordinator Oslo Børs*

## *Status ongoing activities*

- Network
  - FNN
  - VPNett
  - VFN
- Access to test environment
  - Enablement forms
  - Process
  - Replies
  - Configuration
- CDS rehearsals performed
  - Internal
  - Participation from ISV/member

# *CDS – Customer Development Services*

- ISVs and in-house development
  - Support development against a live trading environment
  - System test trading, information and back office applications
  - “Factory acceptance test”
  - Prepare for conformance
- Member and market data vendor
  - “User acceptance test”
  - Training
  - Integration testing (front – back office...)
- Services
  - Subset of production instruments
  - Model Based Testing (MBT)

## *CDS – Status*

- Upgraded and updated for Oslo Børs by 7 Sept 2009
- Limitations
  - FIX enablements 8 September
  - Fixed Income instruments 8 September
  - Preferencing groups 8 September
  - Model Based Testing (MBT), Oslo Børs segments 21 September
- Next
  - New and changed enablements
  - Support during development and testing process
  - Defect handling, new releases?

# *Conformance testing*

- Required to ensure a stable system
  - Between the customers and the exchange
- Mandatory
  - Trading, Information, High volume
  - Separate test environment, pre-booked sessions
- Go-live testing services 16 September 2009
- Required completion before 12 December 2009
- Procedure
  - Scripted and assisted by customer test analyst
  - New service/tool for FIX conformance, CertiFIX
- ISV accreditation
  - Simplifies member conformance, DR participation

# CertiFIX

**FIX Conformance Test Tool Certification: Ernst Roif During, OSLO Børs**

Not Connected    Connect To: Server IP (test.certifix.com) Port (27500) SenderCompID(49) (eroff)    Next Inbound: 3    Next Outbound: 4    Reset Sequence Numbers

Scenario Groups    Questionnaire    Settings    Logout

### QUESTIONNAIRE

Question	Answer
1.) Does your software support Orders?	<input checked="" type="radio"/> Yes <input type="radio"/> No
1.1.) Does your software support Market Orders?	<input checked="" type="radio"/> Yes <input type="radio"/> No
1.1.1.) Is your software able to modify Market Orders?	<input checked="" type="radio"/> Yes <input type="radio"/> No
1.2.) Is your software able to modify Limit Orders?	<input checked="" type="radio"/> Yes <input type="radio"/> No
1.3.) Does your software support Hidden Limit Orders?	<input checked="" type="radio"/> Yes <input type="radio"/> No
1.4.) Does your software support Agency Capacity?	<input checked="" type="radio"/> Yes <input type="radio"/> No
1.5.) Does your software support Orders at the Close?	<input type="radio"/> Yes <input checked="" type="radio"/> No
1.6.) Does your software support Good Till Time Orders?	<input checked="" type="radio"/> Yes <input type="radio"/> No
1.7.) Does your software support Good for Day Orders?	<input type="radio"/> Yes <input checked="" type="radio"/> No
1.8.) Does your software support Good Till Cancel Orders?	<input type="radio"/> Yes <input checked="" type="radio"/> No
1.9.) Does your software support Execute and Eliminate Orders?	<input type="radio"/> Yes <input checked="" type="radio"/> No
1.10.) Does your software support Fill or Kill Orders?	<input checked="" type="radio"/> Yes <input type="radio"/> No
1.11.) Does your software support Iceberg Orders?	<input type="radio"/> Yes <input checked="" type="radio"/> No
1.11.1.) Is your software able to modify Iceberg Orders?	<input type="radio"/> Yes <input checked="" type="radio"/> No
1.12.) Is your software able to modify Named Orders?	<input checked="" type="radio"/> Yes <input type="radio"/> No
1.12.1.) Is your software able to modify Named Orders?	<input checked="" type="radio"/> Yes <input type="radio"/> No
1.13.) Does your software support Pegged Orders?	<input checked="" type="radio"/> Yes <input type="radio"/> No
1.14.) Does your software support Mass Order Deletions?	<input checked="" type="radio"/> Yes <input type="radio"/> No
1.15.) Does your software support Modifying Client Reference (JSE)?	<input checked="" type="radio"/> Yes <input type="radio"/> No
2.) Does your software support Quotes?	<input type="radio"/> Yes <input checked="" type="radio"/> No
3.) Does your software support Trade Reporting?	<input type="radio"/> Yes <input checked="" type="radio"/> No
4.) Does your software support Copy-to functionality?	<input checked="" type="radio"/> Yes <input type="radio"/> No
5.) Does your software support Bond Trading functionality?	<input checked="" type="radio"/> Yes <input type="radio"/> No

View All    Optional Questions    To Scenario Groups

**User Notes**

This Questionnaire is used to personalise your certification requirements based on the functionality that your application supports. Your answers to these questions determine which Scenarios you will be assigned.

You can update this questionnaire at any stage to add or remove functionality.

When you are done updating your answers, press **To Scenario Groups** to return to the Scenarios page.

# CertiFIX

The screenshot displays the CertiFIX web application interface. At the top, it shows the London Stock Exchange Group logo and the title "FIX Conformance Test Tool Certification: Ernst Rolf During, OSLO Børs". Below this, there is a status bar indicating connection details and navigation buttons for "Scenario Groups", "Questionnaire", "Settings", and "Logout".

The main content area is divided into two sections: "SCENARIO GROUPS" and "User Notes".

**SCENARIO GROUPS**

Group Name	Protocol Version	Type	Progress
<a href="#">T05 - Market Order (PM)</a>	Orders-Quotes-Trades (5.0)	MANDATORY	0%
<a href="#">T06 - Modify Market Order (PM)</a>	Orders-Quotes-Trades (5.0)	MANDATORY	0%
<a href="#">T07 - Market Orders (OM)</a>	Orders-Quotes-Trades (5.0)	MANDATORY	0%
<a href="#">T08 - Limit Orders</a>	Orders-Quotes-Trades (5.0)	MANDATORY	0%
<a href="#">T10 - Hidden Limit Orders</a>	Orders-Quotes-Trades (5.0)	MANDATORY	0%
<a href="#">T11 - Agency Capacity Order</a>	Orders-Quotes-Trades (5.0)	MANDATORY	0%
<a href="#">T13 - Good Till Time Orders</a>	Orders-Quotes-Trades (5.0)	MANDATORY	0%
<a href="#">T20 - Named Order</a>	Orders-Quotes-Trades (5.0)	MANDATORY	0%
<a href="#">T21 - Modify Named Order</a>	Orders-Quotes-Trades (5.0)	MANDATORY	0%
<a href="#">T22 - Pegged Order</a>	Orders-Quotes-Trades (5.0)	MANDATORY	0%
<a href="#">T23 - Mass Order Delete</a>	Orders-Quotes-Trades (5.0)	MANDATORY	0%
<a href="#">T24 - Modify Client Reference</a>	Orders-Quotes-Trades (5.0)	MANDATORY	0%
<a href="#">T38 - Copy To</a>	Orders-Quotes-Trades (5.0)	MANDATORY	0%
<a href="#">T39 - Session Level</a>	Orders-Quotes-Trades (5.0)	MANDATORY	0%
<a href="#">T40 - Negative Session</a>	Orders-Quotes-Trades (5.0)	MANDATORY	0%
<a href="#">T41 - Negative Orders</a>	Orders-Quotes-Trades (5.0)	MANDATORY	0%
<a href="#">T50 - Bond Orders</a>	Orders-Quotes-Trades (5.0)	MANDATORY	0%
<a href="#">A01 - Are You Ready To Start Conformance</a>	Orders-Quotes-Trades (5.0)	OPTIONAL	0%
<a href="#">Z01 - Inform Progress To Account Manager</a>	Orders-Quotes-Trades (5.0)	OPTIONAL	0%

**User Notes**

These are your currently assigned Scenario Groups. You must successfully pass all the scenarios in the groups marked "Mandatory" to be Certified. The percentage of the scenarios passed is shown for each group. Your overall progress is shown in the top right corner of the screen.

A scenario is designated as passed if you passed the scenario on your last uncanceled attempt. (If you take a scenario twice and successfully complete the first attempt but are unsuccessful on the second attempt the scenario will be designated as failed.)

Press **View Logs** to view the logs for a particular scenario.

To begin a scenario, click on the scenario's name.

**As the first step of your conformance test please ensure that you select the "A01 - Start Conformance Test" Scenario Group and run the "Reset Progress" Scenario. This scenario can also be used at any time if you wish to reset all of your testing progress.**

After completing all of the MANDATORY scenario groups please select the Complete Conformance Test Group and run the Generate Reports Scenario.

At the bottom of the page, it says "London Stock Exchange plc, +44 (0) 207 797 3100 Site powered by Greenline CertiFIX".

# CertiFIX

The screenshot shows a web browser window titled "FIX Conformance Test Tool Scenario Runner - Microsoft Internet Explorer provided by Dale Berg". The address bar shows the URL "https://test.certiix.com/certiix/Certification/ScenarioFrame". The page features the London Stock Exchange Group logo and the text "London Stock Exchange Group".

The main content area displays a scenario titled "Start - Orders-Quotes-Trades (5.0), T07 - Market Orders (OM) - 01 Send Order \_ Part Fill \_ Full Fill". It includes a list of steps:

1. Connect and Logon
2. Request for New Order Single
3. Confirm NewOrder message received
4. Confirm quantity of last fill

Additional information includes "Scenario Loaded" and "Click start to begin scenario." Below this is a "Start" button, a "Cancel" button, and a "Toggle Logs" button.

Below the scenario information, there is a status bar for "FIX Conformance Test Tool Scenario Runner: Ernst Rolf During, OSLO Bors". It shows "Not Connected" in red, "Connect To: Server IP (tax.certiix.com) Port (27500) SenderCompID(40) (erolf)", "Next Inbound: 3", "Next Outbound: 4", and a link for "Reset Sequence Numbers".

Below the status bar, there is a table header for "Orders-Quotes-Trades (5.0) T07 - Market Orders (OM) - 01 Send Order \_ Part Fill \_ Full Fill (Aug 26, 2009 10:26:42 AM)". The table has three columns: "Type", "Time", and "Text".

At the bottom of the page, there is a footer: "London Stock Exchange plc. +44 (0) 207 797 3100 Site powered by Greenline CertiFIX".

## *Dress rehearsals*

- Performed on the production environment
- Mandatory member participation
  - Only production enablements active
- Software passed conformance
- Training and verification
  - Migration process
  - Connectivity and enablements (member conformance)
  - Configuration for production
  - Operation and trading through one compressed trading day
  - Rollback process
- Performed on Saturdays
  - 12 December 2009 - 16 January 2010 - 30 January 2010 (optional)



# ***Cash equity CCP*** ***Oslo Clearing***

*Torkil Lehn, VP Sales & Client Relations Oslo Clearing*

# *Agenda*

- Value proposition
- Post trade processing
- Risk model
- Time schedule and communication

# *Oslo Clearing – Value Proposition*

- **Efficient integration with existing infrastructure**
  - Optimal netting and settlement efficiency
  - Efficient integration and utilisation of existing infrastructure and functionality
  - High degree of standardisation / harmonisation
  - Flexible Account Structure
- **Oslo Clearing CCP offer includes**
  - All stocks, primary capital certificates and ETFs quoted on Oslo Børs or Oslo Axess
  - Voluntary clearing of all off-exchange matched trades in order to obtain higher degree of netting and reduced counterparty risk
- **Competitive pricing**
  - Customer choice “Price model”
  - Price model(s) adapted to new trading patterns
  - No hidden cost for collateral management
  - Lending schemes ,penalties etc. priced on “at cost basis”
  - Lean and flexible organisation structure allows low cost base

# Oslo Clearing – Value Proposition

- **Single Point of access**

- Interoperability will be launched ASAP after production start
- Interoperability partner to be announced during Q3/Q4 2009
- Distribution through Interoperability and close relationship with GCM's

- **Margining model**

- VaR portfolio model – taking both volatility and correlation into account
- Netting between underlying collateral and Equity transactions

- **“Real time” Risk management**

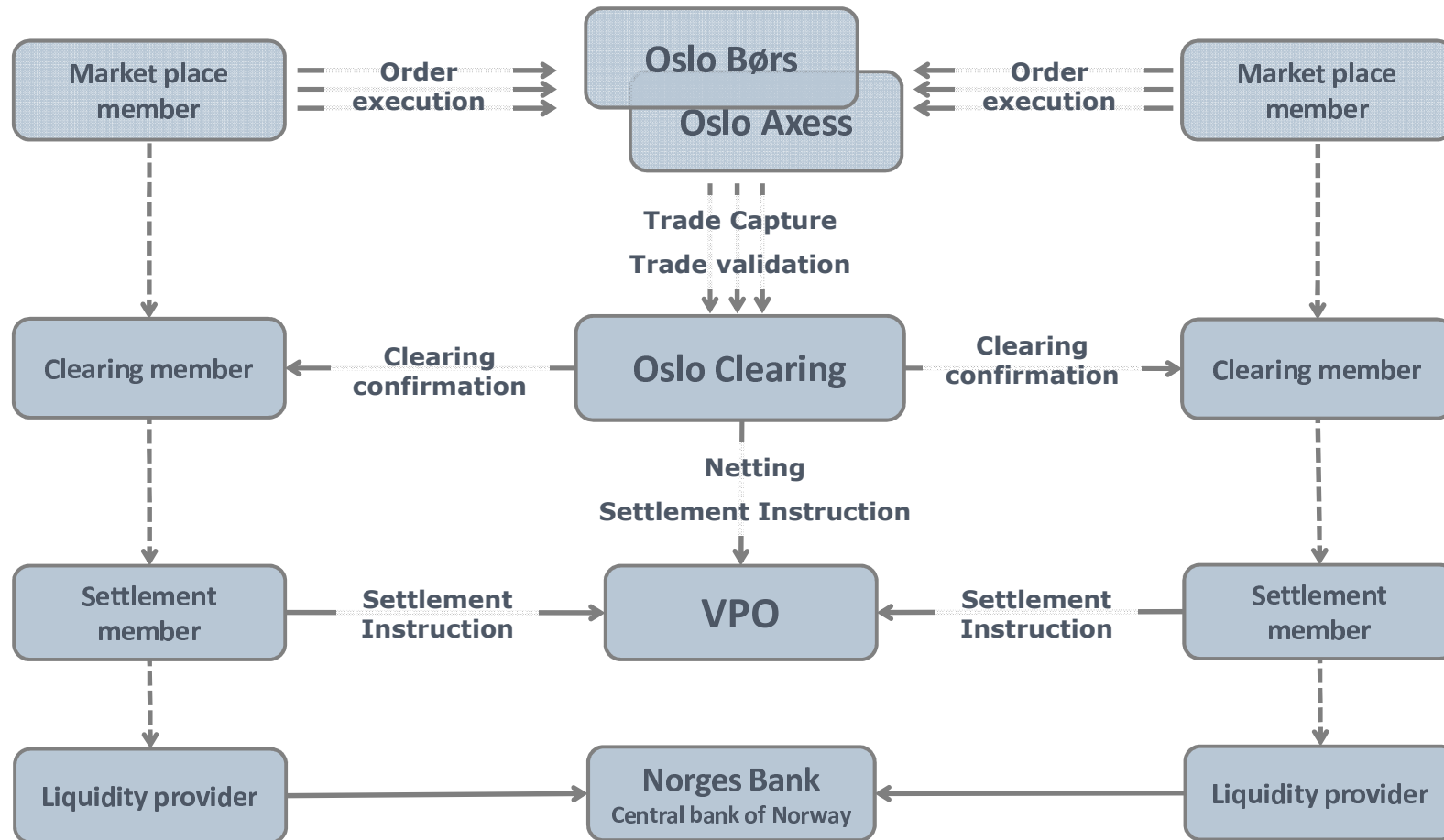
- “Real time” web-solution for clearing members
- Risk management feed to proprietary systems

- **A state of the art collateral management solution**

- Several cash collateral agents
- Tri-party ICSD collateral management services for international fixed income instruments
- Norwegian equities, primary capital certificates, ETFs and fixed income instrument held on pledged VPS accounts



# Post Trade Processing



# *Risk model*

## ▪ **Margin Requirements**

- based on the clearing members distinct system of accounts
- real time calculation based on a VaR model and a 99 % confidence level
- full offset between settlement transactions and collateral positions in the same underlying ISIN
- offset between settlement transactions and collateral positions in different underlying ISIN's
- 1<sup>st</sup> line of defence

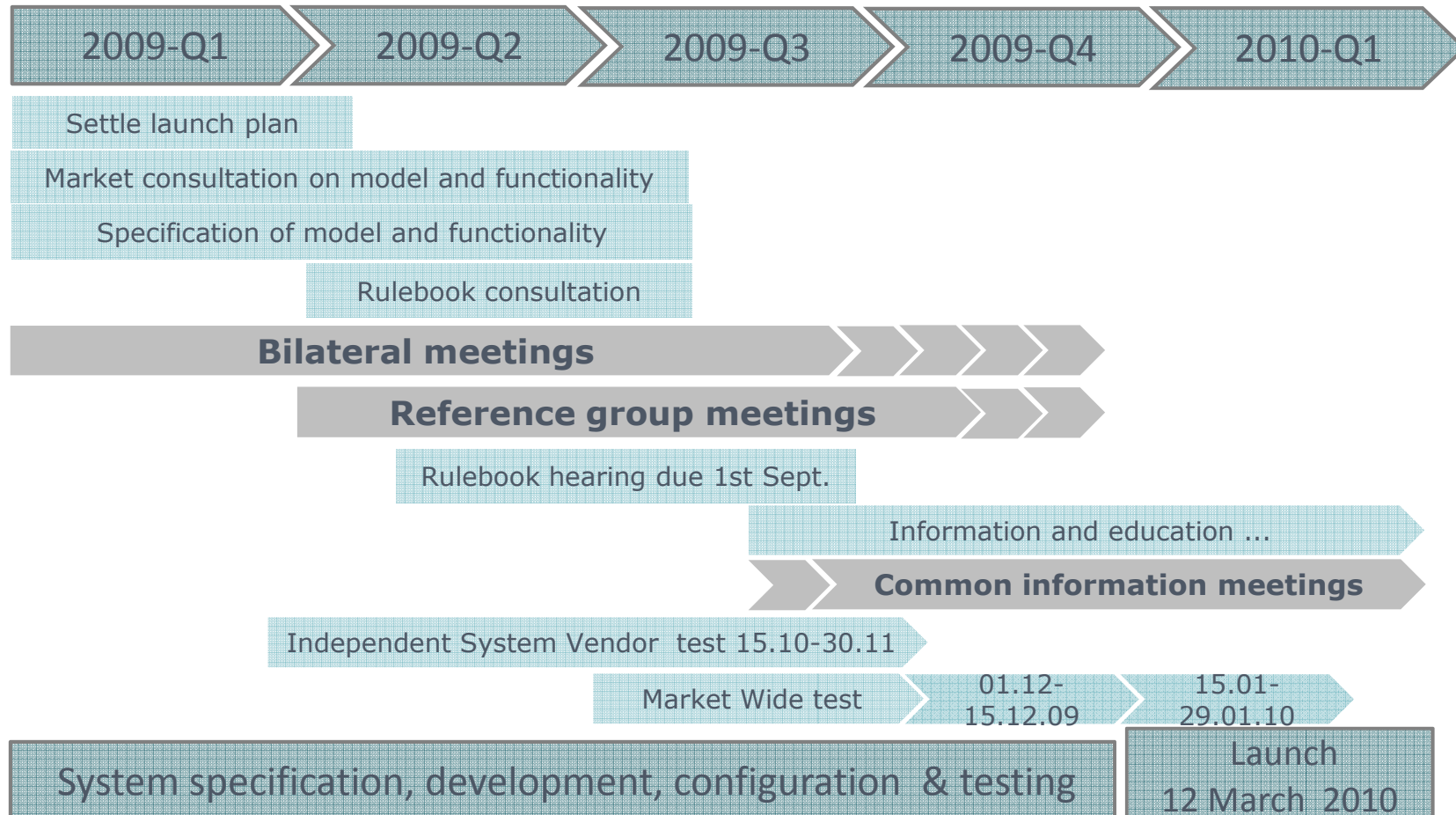
## ▪ **Default Fund**

- joint and several liable default fund contribution requirements
- based on the clearing members average exposure/ margin requirement
- non defaulting clearing members potential loss - limited to their default fund contribution.
- 2<sup>nd</sup> line of defence – the contribution of the clearing member in default
- 4<sup>th</sup> line of defence – the non defaulted clearing members contributions

## ▪ **Oslo Clearing own capital**

- 3<sup>rd</sup> line of defence liable for a limited amount exceeding the funds of the clearing member in default  
and,
- 5<sup>th</sup> line of defence liable any loss exceeding all other resources available in a default situation

# Time schedule



# *External communication*

## **Bilateral meetings**

### ***Agenda***

- Feedback and discussions on consequences of the market model, functionality etc.
- Assist each market participant in preparing the implementation of a CCP

### ***Participants***

- Local and remote market participants
- Trade organisations such as NSDA, SSSA, LIBA
- Third parties such as ISV's involved in the securities market

## **Reference group meetings**

### ***Agenda***

- Discussions about impact and consequences of the implementation of a CCP in the local market
- Obtain constructive input and professional advices related to the market model, functionality, legal issues etc.

### ***Participants***

- Committee of representatives of the different participants in the local market

# External communication

## Common information meetings

### Agenda

- Ensure full transparency and market wide distribution of all information needed for market participants preparing for the launch of a CCP in the local market

### Participants

- All potential participants

**Next meeting 23rd September 2009, 13:00- 15:00**

- Venue: Ground floor Auditorium, Biskop Gunnerus gate 14A ("Postgirobygget")

Further information, including service description, technical information, rulebook etc. will be made publicly available on "Delta" website accessible via both Oslo Clearing and Oslo Stock Exchange websites.



# *Further information*

OSLO CLEARING ASA  
[WWW.OSLOCLEARING.NO](http://WWW.OSLOCLEARING.NO)

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