ITaC Clearing Consultation Session

10 July 2014

Session Objectives

- Ensure a common understanding of ITaC context and principles
- Discuss pre-trade and intraday risk management
  - Further sessions will be set up to close out on solution design
- Clarify architecture and data interfaces
  - Monitoring of trading data
  - Open Interest publication
  - Clearing Member EOD Balancing
  - API vs FTP
- Share and discuss ITaC Clearing Member survey feedback
  - Including general feedback and discussion points

Agenda

- Recap of ITaC context and principles (15 min)
- Project status update (5 min)
- Pre-trade risk management (30 min)
- Intraday risk management (15 min)
- Architecture and data interfaces (25 min)
- General survey feedback and discussion points (20min)
- Next steps and future engagement (10 min)

Recap of ITaC Context and Principles

Programme Overview

- A **multi-year programme** to implement a new **Integrated Trading and Clearing** solution
  - Migrate all Derivative and Bond markets to the MIT Trading platform
  - Migrate all markets to a new Clearing platform
- **Phased approach**

Equity Derivatives
Currency Derivatives

IR & Commodity Derivatives
Cash Bonds

Cash Equities

Recap of ITaC Context and Principles

Drivers

- Growth of the markets
  - We are players on a global market stage and compete with venues even if they are not in SA - global standards and distribution
  - Standardisation of access
  - Consistent, low performance and stability under high volumes
  - Increasing focus on risk management and regulatory drivers
  - Cross-market trading synergies
  - Historically investment in advanced technology platforms has resulted in increased market volumes
  - Exposure to trading and clearing industry thought leadership and associated product evolution

- The cost of change to achieve above is significant however consolidation and standardisation is expected to deliver economies of scale and efficiencies in the longer term

Recap of ITaC Context and Principles

Drivers – Post Trade Backdrop

- Increasing sophistication of CCP risk management and collateral services
- International regulatory standards (i.e. G20, CPSS IOSCO, EMIR, B3, ESMA)
- Under investment in Post Trade services for several years

Recap of ITaC Context and Principles

Drivers – Benefits of the new Clearing solution

- Centralised and enhanced risk management
  - Ability to view and manage participants' risks across markets
  - More sophisticated and flexible margining, back testing, stress testing
  - Move towards real time clearing and risk management
    - E.g. intraday risk monitoring service
- Efficient asset utilisation
  - Acceptance of non-cash collateral, cross market margin offset and netting of settlements
  - Reduced capital requirements and improved liquidity
- Operational Efficiency
  - Automated, standardised and robust processes e.g. Valuations
  - Aggregation of data -> enhanced reporting and analytics capability

Recap of ITaC Context and Principles

Solution Design Principles and Goals

- Take advantage of unique opportunity to review the Derivative and Bond markets
- Standardisation
  - Cross market harmonisation where appropriate
  - Use out of box functionality aligned to international standards where possible
- Separation into loosely coupled trading and clearing systems with separate APIs for each
  - Flexibility to evolve Trading and Clearing separately
- Low latency while still protecting the markets
- Single dissemination channel for live/intraday market data
- Certain non-trading and non-clearing functions to be moved to systems built-for-purpose i.e. Reference Data, Statistics, Billing

Recap of ITaC Context and Principles

Front Ends & ISV Environment

- To date the JSE has provided a front-end for Trading and Deal Management
  - It was absolutely necessary in the early stage of market development
  - This will be discontinued under this project
- Establish a competitive environment in which Independent Software Vendors (ISVs) who specialise in this area can participate
  - Allows experts to elect to deliver customised, superior and/or differentiated solutions
- Increasing JSE concerns in the provision of front ends
  - Liability risk, testing obligations
- Highlights the importance of in-house development and ISV teams in making this project a success
  - JSE is providing substantial lead time by informing the market of the JSE decision

Recap of ITaC Context and Principles

Front Ends & ISV Environment

- Front-Ends functional coverage
  - Trading
  - Deal management
  - Clearing (EOD balancing, replication of margining and fees calculations etc)
  - Risk management
  - Market data
- Client and ISV choice as to what functionality is provisioned in Front-End/s
- Depending on the function/s facilitated, Front-Ends will interface to certain of the ITaC Trading gateways and the Clearing gateway
  - Source of data should be transparent to the End User

Project Status Update

- In final stages of initial, high level solution design

- Clearing Member engagement to date
  - Market Comms session on 13 May
  - Clearing Member consultation session on 19 May
  - Survey distributed to Clearing Members on 21 May
  - Opportunity to provide input on
    - Specific aspects of the proposed Clearing solution
    - General feedback on the ITaC programme
  - 6 Clearing Members responded to the survey

- Planning for Project 1 (Equity Derivatives and Currencies) underway
  - Culminating in obtaining Board approval for formal start of Project 1
- Detailed requirements and design for Project 1 to commence thereafter

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Pre-Trade Risk Management
Principles and Considerations

- Verifying that the pre-trade risk management solution
  - Protects market quality and integrity while balancing this with the need to preserve the flexibility and dynamism of the markets
- Working with Trading and Clearing solution providers
  - In implementing existing pre-trade related functionality and any new/roadmap functionalities
- Considerations
  - Clearing Member feedback
  - Industry/regulatory body recommendations
    - E.g. CFTC white paper 'Recommendations on Pre-Trade Practices for Trading Firms, Clearing Firms and Exchanges involved in Direct Market Access'
  - What other exchanges and markets are doing in this space
  - The unique nature, structure and participant make-up of the South African market

Pre-Trade Risk Management
Principles and Considerations

- Three levels in the electronic trading ‘supply chain’ at which pre-trade risk controls reside
  - Exchange, Clearing Member, Member

- Member level
  - Types of controls recommended include
    - Pre-Trade quantity limits on individual order
    - Pre-Trade price collars
    - Execution Throttles
    - Message Throttles
    - Kill Button
  - Enforcement measures include
    - System and operational requirements
    - Conformance testing

Pre-Trade Risk Management
Principles and Considerations

- Clearing Member level
  - Should be required to institute reasonable measures to confirm that their client trading firms generally implement the pre-trade controls above
  - Enforcement measures include
    - Written certification from the trading firm and ISVs
    - Clearing Member-Member agreements
  - Considerations of competiveness for Clearing Members who have invested or intend to invest in leading edge pre-trade and intraday risk management

Pre-Trade Risk Management

Principles and Considerations

- Exchange level
  - Appropriate protection at the centre to control systemic risk
  - Regulatory developments driving certain minimum controls at the centre
  - Consideration of impact of controls at the centre
  - Different controls and functionality for On-book, RFQ, Off-book activity
  - Need to protect market integrity while allowing flexibility and competitive edge of Clearing Members and other participants

  - Types of controls recommended at the exchange level include
    - Pre-Trade quantity limits on individual orders
    - Intra-day Position Limits
    - Pre-Trade price collars
    - Message Throttles
    - Clear Error Trade Policies
    - Order cancellation policies

Pre-Trade Risk Management

Pre-Trade Limits – Survey Feedback

Questions	Response	Comments Summary
Order Size limits Are the current dealer level initial margin per order limits an integral part of your risk management toolkit?	4 Yes 2 No	• General consensus is that while these are used, position size limitations are more effective. • Need a total exposure limit on positions - margin or deal size limit is pointless when a client / member is attempting to close the position. • Would like ability to place size limits on position at a trading member and down to client level.
Order Size Limits on Front End (as opposed to Trading Engine) Would the enforcement of the above (or similar) limits by Trading Front Ends provide the protection that these limits are intended for?	3 Yes 2 N/a	• Of the CMs that use this type of limit the majority confirmed that the limit applied on front ends would achieve the purpose of the limit. • However the counter view was also put forward - This exists currently as part of the trading engine and is validated at exchange. Surely the onus is on the exchange system to apply this rather than a service provider?
Reported Trade Size Limits Are the current dealer level initial margin per reported trade limits an integral part of your risk management toolkit?	4 Yes 2 No	• As per on-book order size limits (refer above)
Reported Trade Size Limits on Front End (as opposed to Trading Engine) Would the enforcement of the above (or similar) limits by Trading Front Ends provide the protection that these limits are intended for?	4 Yes 2 N/a	• As per on-book order size limits (refer above)

Pre-Trade Risk Management

Price Bands – Survey Feedback

Questions	Response	Comments Summary
Price Bands – current model In your view are the current price bands for reported trades (price move percentage limits based on a static reference price) valuable from a risk management perspective and required going forward?	5 Yes 1 N/a	General support for current process i.e. directing of trades that breach price bands to Clearing Members for acceptance/rejection.
Price Bands - Reject trades outright Should reported trades that breach price bands be rejected outright?	2 Yes 4 No	
Price Bands - Direct trades to Clearing Members Should reported trades that breach price bands be routed to Clearing Member for acceptance/rejection before the trade matches (as per the current process)? *Note to facilitate this functionality Clearing Member front ends will need to interface to the MIT Post Trade Gateway*	4 Yes 1 No 1 Unanswered	

Pre-Trade Risk Management

Permissions & Limits - Proposed

- Permissions
  - Ability to permission functions at instrument/instrument group level
  - Will be set by the JSE on instruction from the Member and confirmed by the Clearing Member
- Market-wide limits
  - Maximum quantity for orders and reported trades at instrument level
- Trading Member limits
  - Per individual order and reported trade size limits at instrument level
  - Working with MIT on implementation of position limits
    - Will engage with Clearing Members on the design and calculations of these limits
- Price monitoring/protection mechanisms (detailed later)
- Market maker protection

The potential for more complex pre-trade limits such as underlying delta limits is under investigation considering relevant principles mentioned previously and feasibility

Pre-Trade Risk Management

Monitoring of Trading Activity - Proposed

- Monitoring of trading activity
  - Can receive a copy of orders in real time
  - Can monitor trades, deals and positions* in real time
  - Open interest published on a snapshot basis (proposed)

Relevant system interfaces discussed later

Pre-Trade Risk Management

Order Cancellation and Throttling - Proposed

- Cancel on disconnect
- Ability to cancel open orders
  - Clearing Members will be able to log in to the MIT Trading System with permissions to cancel orders
- Ability to throttle message input rates
  - Managed by the Exchange
- Disable access to trade (kill switch concept)
  - JSE can immediately disable access on a CompID level on instruction
  - Member can automatically log off all CompIDs
  - JSE can suspend any user, trader, trader group or firm

Pre-Trade Risk Management

Price Monitoring/Protection - Proposed

- Price Bands
  - Where breaches are allowed for reported trades, breaching trades are parked by the Clearing System and directed to Clearing Members for acceptance/rejection
    - Rejected reported trades must be cancelled on the Trading System by the Members
  - Breaching orders can be rejected outright

- Circuit Breakers
  - Static and dynamic; applicable to orders
  - Breaching orders trigger volatility auction or halt

Pre-Trade Risk Management

Price Monitoring/Protection - Proposed

- Execution limits
  - Defined as a percentage or tick variation from the reference price of the instrument
  - Different percentage/ticks can be set for market and limit orders
  - Doesn’t affect the order, only controls the max/min price at which an order is executed
  - Typically used to control adverse, drastic price movements

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Intraday Risk Management

Intraday Risk Monitoring – Survey Feedback

Questions	Response	Comments Summary
Intraday Risk Monitoring Do you require assistance from the JSE to better monitor and manage trading member and client risk intraday? If 'Yes', please use the Comments column to indicate what kind of assistance you would like the JSE to provide.	4 Yes 1 Potentially in future 1 Unclear	General support for the service, in cases dependent on solution and cost. **Points highlighted:** • Management of concentration risk including JSE assistance where the client has multiple accounts across multiple clearing members. • Monitoring of intra day trading in restricted instruments. **Questions/solution considerations:** • Need to assess practicalities in the process and materiality thresholds. • How will risk be managed if beneficial owner is not always known (until Deal Management has been done)?

Intraday Risk Management

Intraday Risk Monitoring – Proposed

- Clearing System risk engine calculates the impact of each additional trade/deal on the riskiness of an entity's portfolio
- Exposures are compared to pre-set limits taking into account collateral posted
- Exposure data and alerts are provided via the API to assist the CCP, Clearing Members and Members in proactively monitoring risk
- Potential limits being considered include
  - Portfolio exposure limits
  - Position limits
  - Concentration limits
  - Underlying delta limits

Intraday Risk Management

Intraday Margin Calls – Survey Feedback

Questions	Response	Comments Summary
Scheduled intraday margin calls Provided the practical operational issues are considered and catered for in the end solution, would you support scheduled intraday margin calls involving the calling of variation margin only at certain time/s of the day? Please use the Comments column to indicate why/why not and if you answered 'Yes' please also provide your view on the most appropriate time/s for such margin calls.	4 Yes (dependent on practicalities and timings) (2 yes for Adhoc calls)	General support dependent on timings and other practical considerations. **Questions/solution considerations:** • Clarity on the process and procedure and how it will be implemented, specifically time of call - latest 1pm, preferably earlier. • Should be linked to the clearing system call balances, and the member should be notified when predefined settlement limits have been breached, for example, midday.

Intraday Risk Management

Intraday Margin Calls – Proposed

- Will provide functionality for and may introduce *daily scheduled** intraday margin calls

**The JSE currently caters for ad-hoc intraday margin calls in periods of extreme volatility and this will be retained*

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Architecture & Data Interfaces

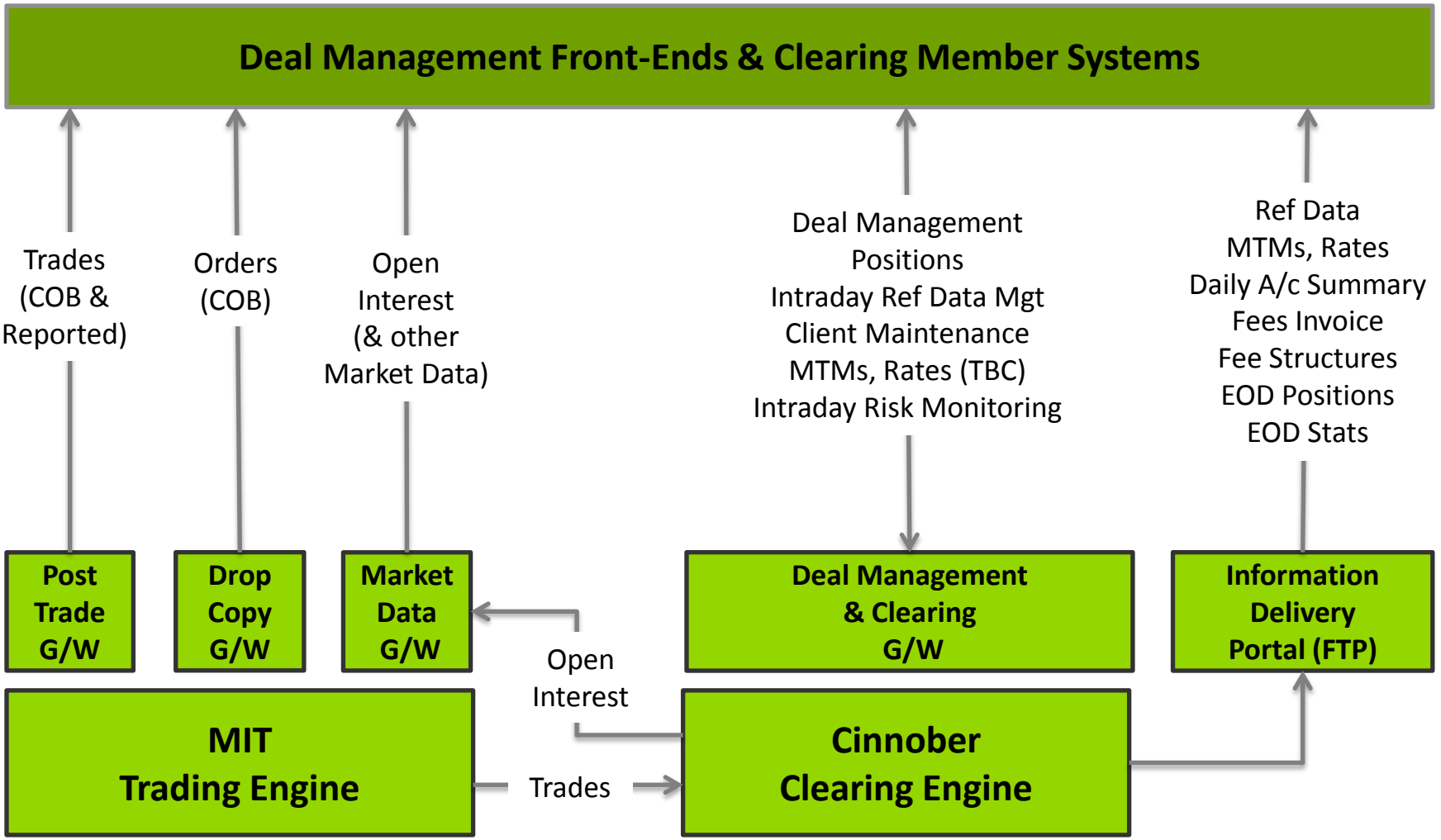
Clarifications from Clearing function perspective

- Objective of next slides is to provide clarification on how the following functions will be facilitated in the proposed ITaC solution
  - Receipt/monitoring of
    - Orders
    - Trades
    - Deals
    - Positions
    - Open Interest
    - Live prices
  - EOD Balancing
  - Reference and other data – API vs FTP

<u>Definition of terms:</u> Trades result from matching of COB orders and reported trade requests;
Deals result from Deal Management activities (allocations, assigns, accumulations)

Architecture & Data Interfaces

Clearing Architecture & Interfaces - Proposed



Architecture & Data Interfaces

Monitoring of Orders – Survey Feedback

Questions	Response	Comments Summary
Do you have a requirement to monitor orders (via Drop Copy)? Do you require the ability to monitor member orders on a ~~near~~ real time basis? The interface for this is the MIT Drop Copy gateway (FIX) - provides a copy of orders and execution reports (matched orders)	5 Yes 1 No	• One Clearing Member highlighted need for client validation • Surely all information pertaining to orders, trades and prices should be available real time? • What will the costs be to interface to the MIT gateway? **Clarification:** • Orders (and other trading data) will be available in real time

Architecture & Data Interfaces

Receipt/Monitoring of Trading Data - Proposed

- Orders (including order executions)
  - Real time via MIT Drop Copy Gateway
- Trades
  - Real time via MIT Post Trade Gateway (COB & Reported Trades)
- Deals
  - Real time via Cinnober RTC gateway
- Positions
  - Available in near real time (in the order of 2-5s) via Cinnober RTC API
  - If required in real time, can be calculated by interfacing to the MIT Post Trade Gateway to receive Trades and Cinnober RTC Gateway to receive Deals
- Live Prices
  - Real time via the MIT Market Data Gateways

Architecture & Data Interfaces

Client Validation - Proposed

- Proposed design excludes client validation on the Trading Engine
- Proposed solution and process
  - Client codes validated on the Front Ends
  - In the event of an invalid client code real time alerts generated
  - Clearing system shifts trade to Member's house account
  - Member allocates trade to correct client account (intraday)

- Experience on Equity market
  - Very few incorrect client codes and has not been a problem

Architecture & Data Interfaces

Open Interest - Survey Feedback

Questions	Response	Comments Summary
Open Interest – do you use the current feed? Do you make use of the current live (~~near~~ real time) Open Interest feed?	3 Yes 1 not in Clearing, but possibly in other areas 2 No	• Our risk management revolves around this. • To accurately risk manage concentration risk, we would require open interest real time. Our credit risk team pull feeds from GCMS to risk manage our entire portfolio so I'm sure they would make use of this data. • Used in trade management of bank position vs net open position. • No, make use of open interest figures reported in the EDM Stats. • No, not within the clearing division. Other areas of the bank may use this data (on a daily/weekly basis). **Questions:** • I thought currently open interest is real time, not "near" real time?
Open Interest – is a real time feed required? If you answered 'Yes' to the above question, is the availability of live open interest updates (as opposed to periodic snapshot updates) vital to the functions you listed?	3 Yes 3 N/a (based on above answer)	• Critical to view this information for trading purposes

Architecture & Data Interfaces

Open Interest - Proposed

- Assessing appropriate frequency of publication
- Proposed to be disseminated via the MIT Market Data Gateways on a snapshot basis i.e. periodically throughout the day, frequency TBD
- Will also be available at EOD via FTP site
- Considerations
  - International precedent – the exchanges we have researched publish open interest a few times a day or at EOD only
  - Beneficial owner issue arguably undermines value of a real time feed
  - Latency, bandwidth and cost impacts of publishing Open Interest in real time

Architecture & Data Interfaces

EOD Balancing - Proposed

- EOD Balancing - margin and fees replication
  - All data required for balancing will be provided including
    - Deals with flags and trade/deal links for fee calculations
    - Rates and MTM prices
    - EOD Positions
    - Fee structures
    - Daily Account Summary Report

Architecture & Data Interfaces

API vs FTP – Survey Feedback

Questions	Responses	Comments Summary
Data publication – is the use of FTP as a dissemination channel for certain data an issue? Publication of MTM prices (applicable to both early valuations and End Of Day) and Rates (JIBAR, STeFI etc.) Would the provision of this data via the proposed JSE FTP site (as opposed to downloadable via the API) introduce significant technical complexity and/or limit the effectiveness/performance of any Clearing solutions dependent on this data?	1 Yes 5 TBC/unable to comment	• FTP outdated, fewer sources and access mechanisms the better • TBC - dependent on IT analysis, timings etc. • Can't comment at this stage

Architecture & Data Interfaces

API vs FTP - Proposed

- APIs used for dynamic intraday reference data
  - Instruments, Clients, Tripartite agreements
- FTP used for static data, such as
  - Clearing Member, Member, Branch, Client, Tripartite, Trader (Dealer), Instrument data published at EOD/SOD
  - Margin parameters, collateral haircuts
  - Rates and MTM prices (early valuations and EOD)
- Reasons for use of FTP as a dissemination channel
  - Latency, bandwidth, cost of catering for this on the APIs
- As appropriate SLAs and/or announcements will be used to inform data file availability
- Requesting/re-requesting data e.g. in event of a late login or intraday disconnect
  - Download SOD ref data from FTP site and re-request all intraday updates via Cinnober RTC API, or
  - Re-request all ref data via Cinnober RTC API (solution to be finalised)

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General Survey Feedback & Discussion Points

Theme	Description
Pursuit of trading speed and volumes vs risk management	• Speed and volume should not be pursued to the detriment of the clearing member and risk management capabilities.
Front Ends & Clearing Member Systems	• New front end landscape and impact to Clearing Members
Bandwidth	• Bandwidth impacts to Clearing Members
Cost	• Cost impacts to Clearing Members
Solution provider and support	• Where is the Cinnober system in production for Derivatives? • Implications for support given vendor's overseas location.
Commodities market functionality	• Is the Agricultural market and functionality such as silo certs being catered for?
Sub accounts	• Will sub accounts still exist in the new solution?
Clearing Member level of comfort with technical aspects of the solution	• Requests for inclusion of vendors and technical teams in ITaC sessions to ensure understanding and ability to influence architectural and technical aspects of the solution.

Next Steps & Future Engagement

- Establish mandates of working groups
- Joint Clearing working group
  - Clearing Members and ISVs
- Sub working groups
  - Clearing Operations
  - Risk Management
  - Technical
- Confirm meeting frequency
  - Proposing a combination of regular and ad-hoc meetings of the different working groups
  - Welcome stakeholder input on appropriate meeting frequencies
  - Suggest Risk Management and Technical working group sessions in the near future

Appendix
Other Clearing Member Survey Questions

Questions	Responses	Comments
Non-cash collateral Do you have the requirement to call for securities collateral intra-day for new exposures that have been created?	3 Yes 3 No	**Question:** • Who will set the value on these assets?
Reliance on JSE for historical data Do you have a reliance on the JSE for historical data? If 'Yes' please use the Comments column to indicate what type/s of historical data (e.g. positions data) and how much history of each type of data you require the JSE to be able to provide on request.	3 Yes 3 No	• We use current data loaded on JSE website mostly of the last business day (the previous business day). However, historical data could be requested by some of our foreign clients. • Yes - We use historical volume data to calculate averages to outline our risk management principles. • No - We can source historical data from our GCMS application. • Yes - Require transaction and position level detail on a client basis for 1 year period (investigation of differences & as the golden source of info). This should include interest data which is frequently required for historical investigation of discrepancies and claims.)