

Pre-Trade Risk Management (PTRM) in Derivatives Market

February 2015



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- PTRM follows the global regulatory directions, e.g., as described in “Principles for Direct Electronic Access to Markets” by the International Organization of Securities Commissions (IOSCO). Under these principles, intermediaries retain ultimate responsibility for all orders under their authority and are responsible for pre-trade controls, but exchanges can facilitate this by providing the necessary transparency to ensure that intermediaries are able to meet their obligations
- Recommendations by Futures Industry Association (FIA) are considered
- PTRM tools at exchange level has already been in place with major derivatives exchanges (e.g., Eurex, CME)
- Clearing Participant Protection - PTRM helps prevent participants from unintended and rapid build-up of excessive positions due to erroneous trading algorithm
- Enhanced Drop Copy service will be introduced for General Clearing Participants(GCPs) tentatively in Q2 2015 (see Appendix I)

Introduction: Scope of PTRM



- Applicable to HKATS Derivatives Market
- Risk checks at Exchange Participant's (EP's) firm level. Not investor account level checks
- Mandatory risk checks to EVERY order placed to HKATS
- Complementary to Participants' own risk controls
- Enable risk limit settings by:
 - Direct Clearing Participants or Clearing Participants (DCPs) for their associated EPs
 - GCPs for their Non Clearing Participants (NCPs) with whom it has entered into a Clearing Agreement

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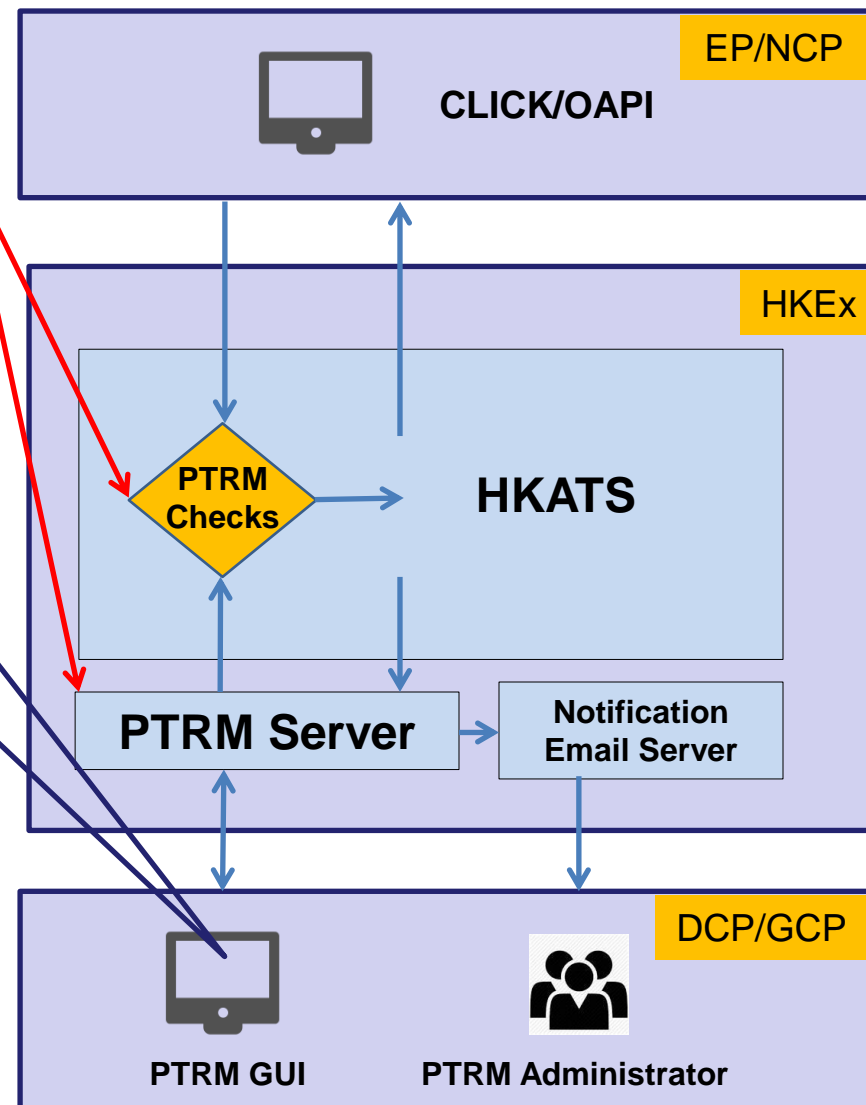
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Overview of PTRM: Key Concepts

- Applicable to HKATS Derivatives Market
- Mandatory risk checks for all inbound HKATS orders
- Enable DCP/GCP to set Risk Limits against these Risk Checks on their EP/NCP
- Risk Limits can be set upon a Risk Group which contains one or more HKATS Username(s)
- Depending on the nature of the Risk Checks, orders will be rejected or the Risk Group will be blocked
- Emergency Buttons on Risk Group for Participants:
 - Block
 - Unblock (Only for DCP/GCP)
 - Mass Order Cancellation
 - Kill Switch

Intraday Risk Checks:
Max Order Size
Max Order Rate
Max Intraday Exposure

PTRM GUI Functions:
Defining Risk Groups
Setting up Risk Limits
Emergency Buttons



▪ PTRM GUI is a graphical user interface that allows Participants to perform PTRM GUI functions. The PTRM GUI connection will be given to a Participant assigned **PTRM Administrator**

Overview of PTRM: PTRM GUI Functions for PTRM Administrators

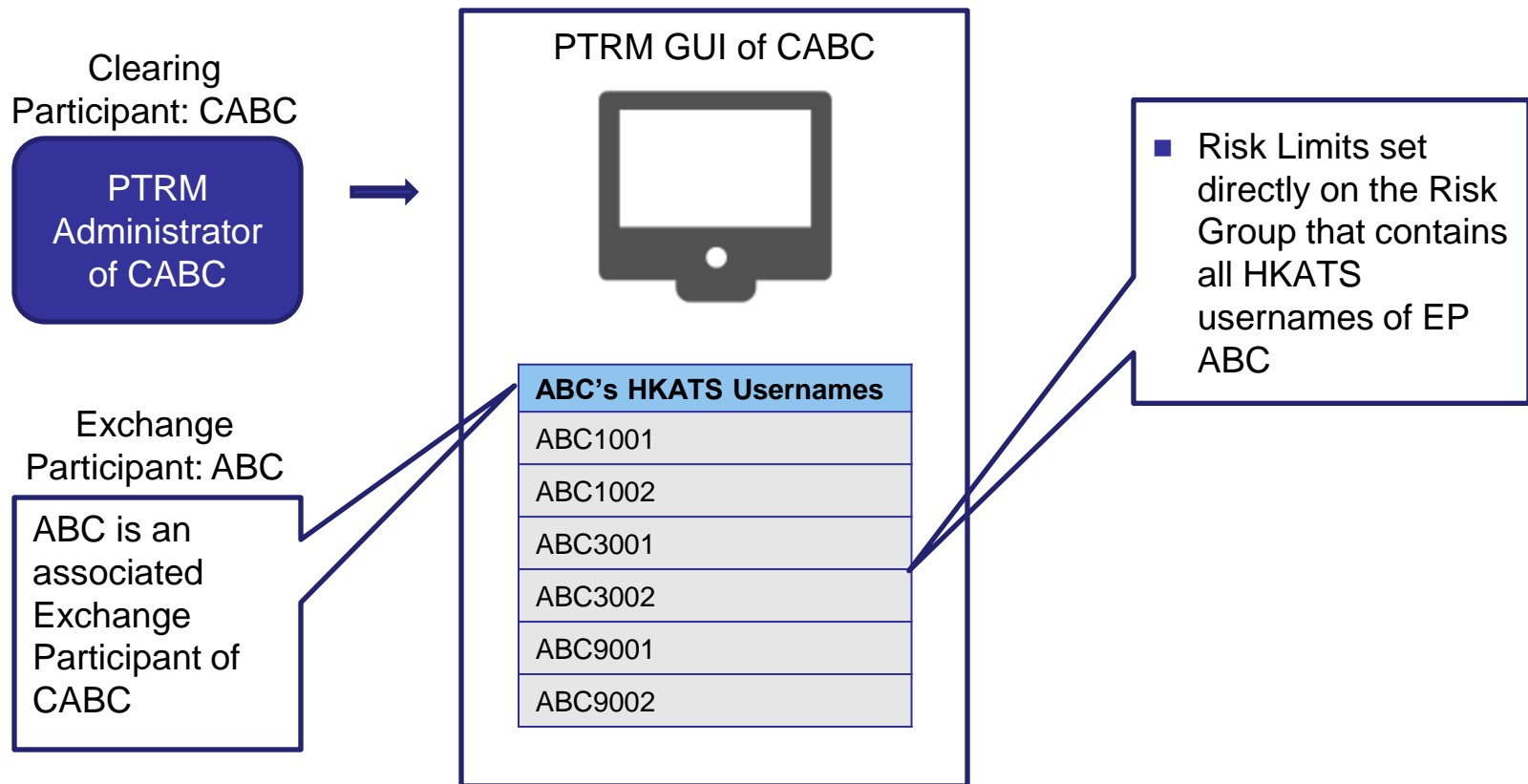


PTRM Administrator	Define Risk Groups	Setting Limits	Emergency Buttons
GCP Delegate	✓	✓	✓
NCP Delegate	✗ Rely on GCP	✗ Rely on GCP	✓ Unblock by GCP
DCP Delegate	✓	✓	✓
EP Delegate	✗ Rely on DCP	✗ Rely on DCP	✓ Unblock by DCP

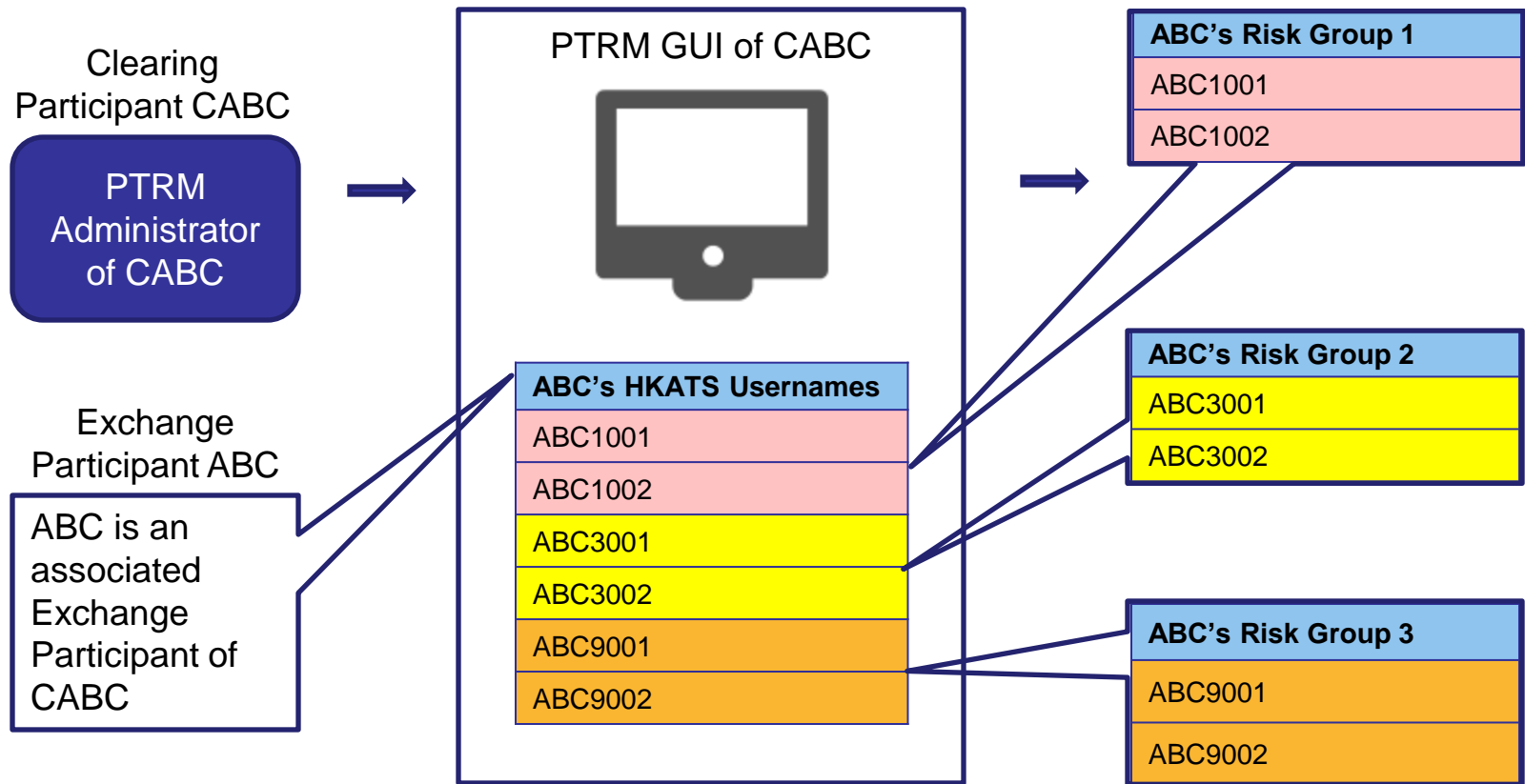
- Basic PTRM GUI connection will be given to Participants free of charge

Overview of PTRM: Defining Single Risk Group by DCP (Case 1)

- Risk Group is a collection of HKATS usernames

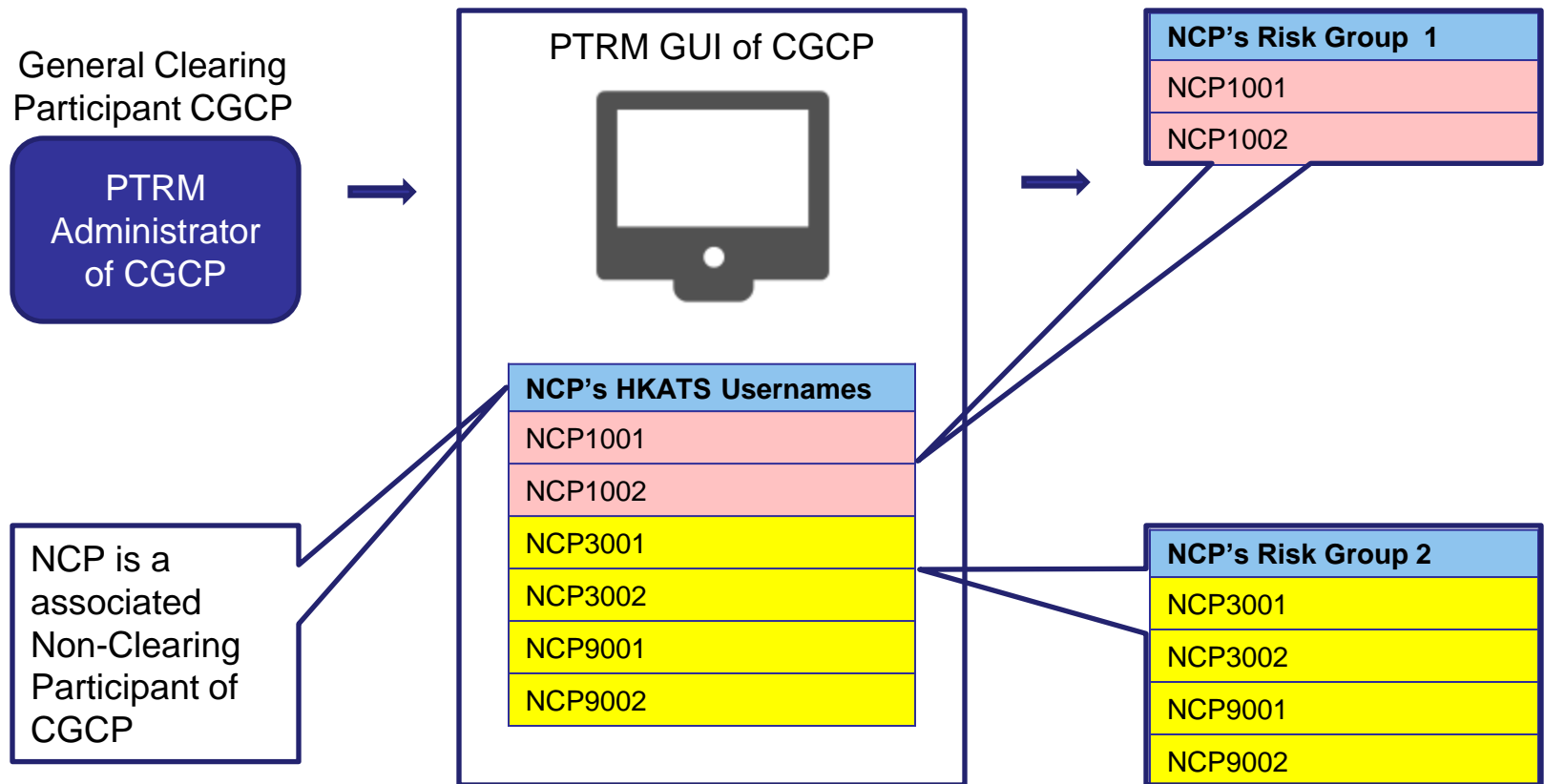


Overview of PTRM: Defining Multi Risk Groups by DCP (Case 2)



- 3 separate sets of Risk Limit can be defined for the 3 Risk Groups once they are created

Overview of PTRM: Defining Multi Risk Groups by GCP: (Case 3)



- 2 separate sets of Risk Limit can be defined for the 2 Risk Groups once they are created
- Note: Usernames within a Risk Group must belong to the same EP/NCP

Overview of PTRM: Risk Checks



Risk Check	Description	Feature
<p>Max Order Size</p>	<ul style="list-style-type: none"> ▪ Allow more granularity for order size limits ▪ Different settings for different underlying futures, calls and puts 	<ul style="list-style-type: none"> ▪ Non-accumulative ▪ Order sizes are checked every time before reaching the Central Order Book
<p>Max Order Rate</p>	<ul style="list-style-type: none"> ▪ Allow Participants to manage the number of orders that can be entered into the market per a pre-set period of time ▪ Single order (MO31) and double-sided quotes (MO37) 	<ul style="list-style-type: none"> ▪ Accumulative ▪ Risk Limit consumption and calculation will be done at PTRM Server ▪ Upon a Risk Limit breach, subsequent orders from the corresponding Risk Group will be rejected
<p>Max Intraday Exposure</p>	<ul style="list-style-type: none"> ▪ Allow Participants to limit the intraday exposure associated with a HKATS username or a group of HKATS usernames 	

Overview of PTRM: Setting Limits on Risk Groups by Participants



ABC's Risk Group 1	
ABC3001	
ABC3002	

- Risk limits can be set manually at PTRM GUI or,
- Upload by batch following the file format specified by HKEX

Limits set on Risk Group 1

Max Order Size Limits (Lot)	
HSI Futures	100
HSI Call	200
HSI Put	250
HKB Futures	100
HKB Call	250
HKB Put	200
...	...

Max Order Rate Limit	
No. of Orders	120
Order Rate Period (Sec)	300

Max Intraday Exposure Limits (HKD Equivalent)	
Net Futures Long/Short	90,000,000
Gross Futures Long/Short	200,000,000
Net Options Long/Short	20,000,000
Gross Options Long/Short	100,000,000

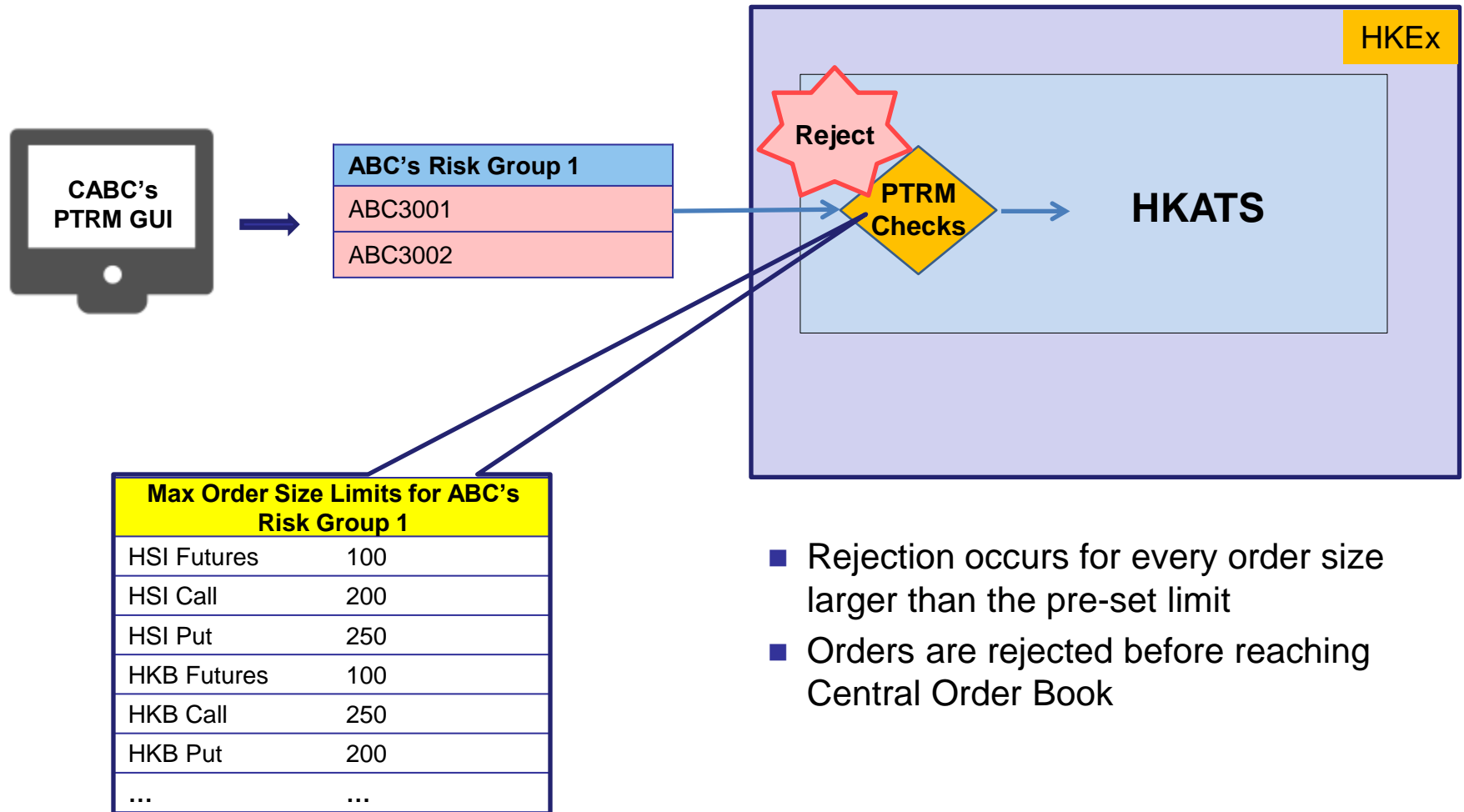
- Exposure = (Trade size or open order size) x Unit Margin of the series

- Order rejected if limit breached

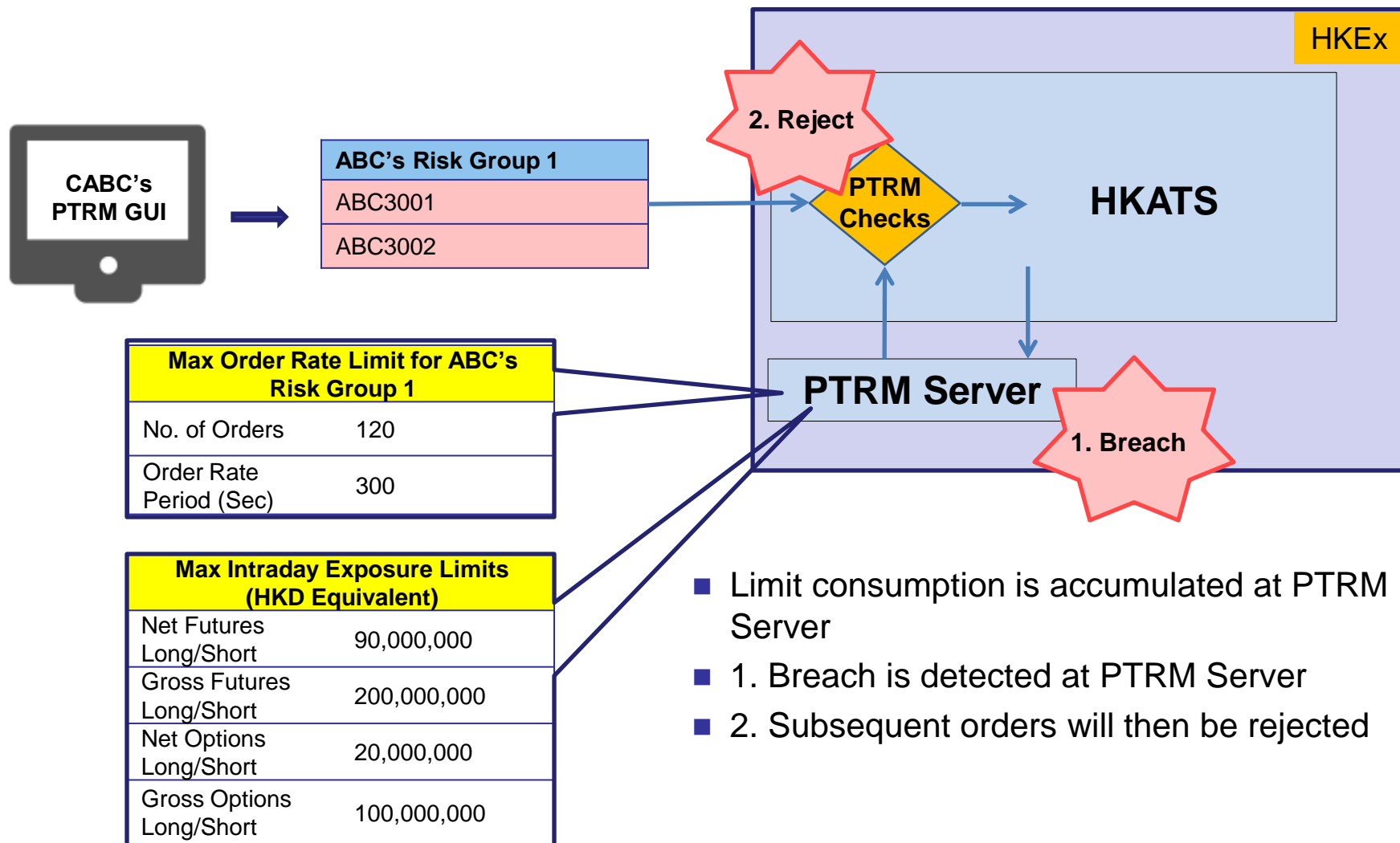
- Risk Group 1 Blocked if either one limit breached (can only be unblocked by CABC)
- Notification and warning emails will be sent before a limit breached for Max Intraday Exposure
- Subsequent orders will be rejected once a limit breached
- Risk consumptions will be reset to zero after day end batch
- Level of utilization can be monitored at PTRM GUI

- HKEX will review the "Reasonableness" of the Risk Limits set by PTRM Administrators on a regular basis

Overview of PTRM: An Example of Max Order Size Risk Check



Overview of PTRM: An Example of Max Order Rate Risk Check/Max Intraday Exposure Check



Overview of PTRM: Emergency Buttons in PTRM GUI



Emergency Button	Description
PTRM Mass Order Cancellation	<ul style="list-style-type: none">Cancel all open orders of a Risk Group
Block	<ul style="list-style-type: none">Block the HKATS username(s) of a Risk Group from entering new ordersThe HKATS usernames of a blocked Risk Group can still cancel outstanding orders
Kill Switch	<ul style="list-style-type: none">A combination of Block and PTRM Mass Order Cancellation functions in one action
Unblock	<ul style="list-style-type: none">Resume order entry of a blocked Risk GroupPTRM Administrator can unblock a Risk Group by updating the breached Risk Limit and then unblock the Risk Group

- Participants are reminded to use the above buttons in emergency situations only

Overview of PTRM: Email Notifications and Reports



■ PTRM Email Notifications:

- An email group of recipients can be set up by the PTRM Administrator to receive PTRM notifications
- Email notifications of specific PTRM events will be sent to recipients:
 1. Breaching of Risk Limits
 2. Notification & warning before a Risk Limit is breached for Max Intraday Exposure
 3. Changes in PTRM settings, etc.

(Note: Email notification may depend on factors not under control by HKEx nor the Participants and thus Participants should not rely solely on email notification. Participants can also receive PTRM notifications at PTRM GUI)

■ PTRM Reports available through DCASS Terminal:

- **Daily Audit Trail Report** will show event logs regarding specific PTRM GUI activities
- **Daily Max Limit Utilization Report** will show the maximum utilization of each Risk Limit

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- Nominate 2 Project Coordinators (1 from business, 1 from IT) for the PTRM initiative by May 2015. They will be the main contacts with HKEx regarding matters related to PTRM project implementation. HKEx will regularly communicate with the Project Coordinators

- Assign authorized staff(s) as PTRM Administrator(s) to:
 - Attend PTRM GUI training sessions
 - Define Risk Groups
 - Set Risk Limits

- Gather relevant information for the purpose of setting up Risk Groups and the corresponding Risk Limits (e.g. intraday open orders and executed trades)

- Perform hardware, network and HKATS OAPI programs reviews based on:
 - The minimum PC requirements for PTRM GUI
 - The network connection requirements for PTRM Gateway
 - The new OAPI rejection messages

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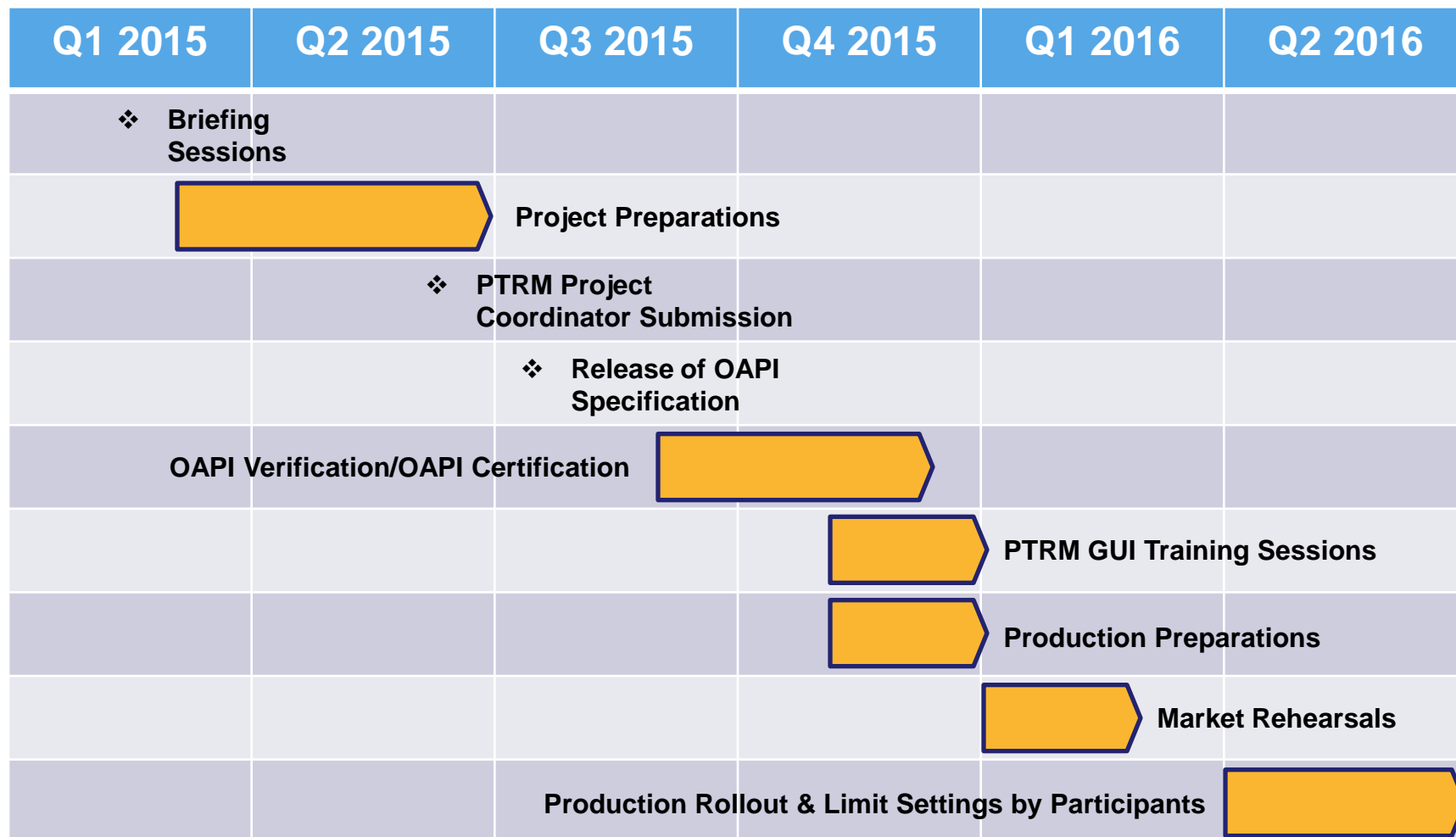
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Tentative Implementation Schedule



OAPI : HKATS OAPI program developed by Participants/Vendors

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Technical Information

Minimum PC Requirements for PTRM GUI



- PTRM GUI is a Java web-based Graphic User Interface for Participants to access the HKEX PTRM system via PTRM Gateway such that they can control and manage their Risk Groups and their corresponding risk limits

PTRM GUI	
	Minimum Requirements
Processor	Intel Core i3-550 3.2GHz or higher
RAM	4GB
Storage	10GB
Network adapter	100Mbps full-duplex
Monitor	1280 x 1024 resolution
OS	Microsoft Windows 7 (64 bit)
Layered software	JAVA 1.6 or Higher
	See Java System Requirements: http://java.com/en/download/help/sysreq.xml
	Anti-virus software
Supporting Browser	Windows Internet Explorer (IE) 8

- Participant owned Firewall – IP/Port Reconfiguration if necessary
- PTRM Gateway connections
 - SDNET/2 (except hosting) can be reconfigured if necessary for accessing PTRM Gateway
 - Bandwidth – Estimated to consume less than 1 Mbps of the existing SDNET/2 Circuit
- Contingency Arrangement
 - Backup servers for PTRM are installed at Secondary HKEx Data Centre
 - In case of failover, all connected PTRM GUI clients will be logged out and have to re-login manually

- PTRM related emails will be sent out for Risk Group related events (e.g., notification, warning or breach, etc.)
- Participants should ensure that the email group recipients are appropriately equipped to receive those alerts from PTRM Email Server
- There will be a limit on the number of email recipients within an email group
- Email notification may depend on factors not under control by HKEx nor the Participants and thus Participants should not rely solely on email notification

- 2 new order rejection messages will be introduced in PTRM

User is in a breached pre trade risk state (-850002)	Rejection message for: <ul style="list-style-type: none">• Max Order Rate Check• Intraday Exposure Check
User has breached a pre trade risk limit (-850004)	Rejection message for: <ul style="list-style-type: none">• Max Order Size Check

- OAPI developers have to verify their programs in HKEx OAPI Testing Environment and ensure that these 2 new rejection messages can be properly handled
- Certification Test is mandatory for all changed OAPI programs

HKEx Technical Support

HKATS Hotline: 2211 6360

Email: clicksupport@hkex.com.hk

DCASS Hotline: 2979 7222

Email: dcassoapi@hkex.com.hk

Web Corner:

http://www.hkex.com.hk/eng/market/dv_tradinfra/ptrm.htm

http://www.hkex.com.hk/chi/market/dv_tradinfra/ptrm_c.htm

Q & A

Thank you!

Appendix I: Enhanced Drop Copy Service



- The enhanced Drop Copy service:
 - Is an extension of the existing trade feed available at DCASS
 - Provide a feed of order updates to General Clearing Participants (GCPs) from their associated Non-Clearing Participants (NCPs) via GCPs' DCASS OAPI programs for their risk management purpose