



Enhancement in the Pre-Trade Risk Management (“PTRM”) System in Derivatives Markets: HKATS Risk Functions Enhancement (“PTRM 2.0”)

Sanly Ho
Managing Director, Co-Head of Trading Operations

Eddy Kwok
Vice President, Trading Operations

26th May 2021

HKEX
香港交易所

Disclaimer

The information contained in this presentation is for general informational purposes only and does not constitute an offer, solicitation, invitation or recommendation to subscribe for or purchase any securities or other products or to provide any investment advice of any kind. This presentation is not directed at, and is not intended for distribution to or use by, any person or entity in any jurisdiction or country where such distribution or use would be contrary to law or regulation or which would subject Hong Kong Exchanges and Clearing Limited (“HKEX”) to any registration requirement within such jurisdiction or country.

This presentation contains forward looking statements which are based on the current expectations, estimates, projections, beliefs and assumptions of HKEX about the businesses and the markets in which it and its subsidiaries operate or aspires to operate in. These forward looking statements are not guarantees of future performance and are subject to market risk, uncertainties and factors beyond the control of HKEX. Therefore, actual outcomes and returns may differ materially from the assumptions made and the statements contained in this presentation. The implementation of these initiatives is subject to a number of external factors, including government policy, regulatory approval, the behaviour of market participants, competitive developments and, where relevant, the identification of and successful entry into agreements with potential business partners. As such, there is no guarantee that the initiatives described herein will be implemented, or that they will be implemented in the form and timeframe described herein.

Although the information contained in this presentation is obtained or compiled from sources believed to be reliable, HKEX does not guarantee the accuracy, validity, timeliness or completeness of the information or data for any particular purpose, and shall not accept any responsibility for, or be liable for, errors, omissions or other inaccuracies in the information or for the consequences thereof. The information set out in this presentation is provided on an “as is” and “as available” basis and may be amended or changed. It is not a substitute for professional advice which takes account of your specific circumstances and nothing in this document constitutes legal advice. HKEX shall not be responsible or liable for any loss or damage, directly or indirectly, arising from the use of or reliance upon any information provided in this presentation.



Overview



Overview

- Established a set of light-touch, pre-trade and at-trade prescribed risk controls for General Clearing Participants (GCPs) and Clearing Participants (CPs) to manage respectively the pre-trade and at-trade risks of their Non-Clearing Participants (NCPs) and Exchange Participants (EPs) since 2016.
- Established at the same time a Kill Switch (stop and cancel) function for GCPs, CPs, NCPs and EPs.
- HKEX review regularly with all participants on the mandatory risk limits.
- Considered by the Derivatives Market users as an effective, back-stop pre-trade risk management system at the exchange level.



Agenda

- Target Audience
- Current PTRM System (“PTRM 1.0”)
- Enhanced PTRM System (“PTRM 2.0”)
- Technical Arrangements & Participant Readiness



Target Audience

- PTRM Authorized Person
- Responsible Officer
- Trading
- Risk Management
- Information Technology

To support both the preparation and implementation.

Current Information	Location
Information Paper (March 2021)	https://www.hkex.com.hk/-/media/HKEX-Market/Services/Trading/Derivatives/Trading-Mechanism/Pre-Trade-Risk-Management-(PTRM)-System-in-Derivatives-Markets/Information-Paper/PTRM2InfoPaper20210301.pdf?la=en
PTRM Web Corner	https://www.hkex.com.hk/Services/Trading/Derivatives/Overview/Trading-Mechanism/Pre-Trade-Risk-Management-(PTRM)-System-in-Derivatives-Markets?sc_lang=en



HKEX - Our Services / Trading / Derivatives / Overview / Trading Mechanism / Pre-Trade Risk Management (PTRM) System in Derivatives Markets

Pre-Trade Risk Management (PTRM) System in Derivatives Markets

Overview

Proposed Pre-Trade Risk Management System Enhancement in Derivatives Market ("PTRM2.0")

- Information Paper
- Information Paper on Pre-Trade Risk Management ("PTRM") System Enhancement in Derivatives Market - HKATS Risk Functions Enhancement ("PTRM2.0")
- HKFE / SEHK Circulars
- Briefing Sessions on Pre-Trade Risk Management ("PTRM") System Enhancement in Derivatives Market - HKATS Risk Functions Enh

Pre-Trade Risk Management System in Derivatives Market ("PTRM1.0")

- Overview Briefings
- Information Session - Risk Limit Setting and Review for HKATS Risk Functions
- Presentation Materials of Briefings on Pre-Trade Risk Management (PTRM) System in Derivatives Market
- Information Paper
- Information Paper on Pre-Trade Risk Management (PTRM) System in Derivatives Market
- User's Guide
- HKATS Risk Functions User's Guide
- Quick Reference for HKATS Risk Functions (PTRM)
- Technical Documentations (For OAPI Developers)
- OAPI Specification & Highlighted Changes (HKATS)
- OAPI Verification Test
- OAPI Verification Test Application Form and Test Script
- Market Behaviour

Market Opening Period

Current PTRM System (“PTRM 1.0”)



PTRM 1.0 – Graphical User Interface (“GUI”)

Genium INET TradeGuard

File Sound Help

Pre Trade Limits Groups

Participants Pre Trade Limits Group	Breaches	Warnings	Notices	Warn %	Notice %	Order Rate L...	Order Rate P...	Order Rate
HK								
HK								
HK BASE	0	0	0	75	50	15,000	300	0
HK BASE	0	0	0	75	50	15,000	300	0

Order Size Limits Intraday Exposure Check Users Email Alerts

Intraday Exposure Check

Options Order Coefficient (%): 100 Next Day Options Order Coefficient (%): 100

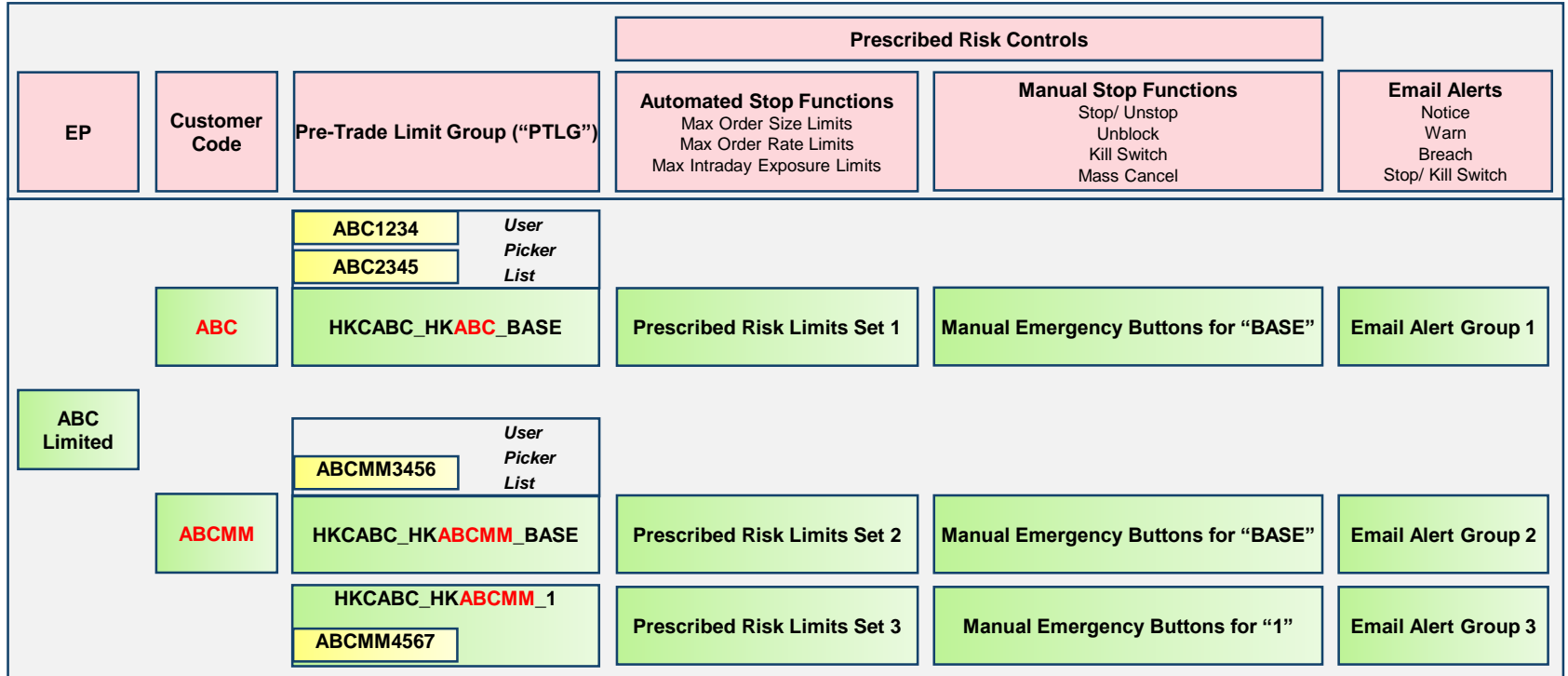
Futures Order Coefficient (%): 100 Next Day Futures Order Coefficient (%): 100

Intraday Exposure	Risk Limit (HKD Eqv)	Long Exposure	Utilization %	Short Exposure	Utilization %
Gross Futures	1000000000	0	0.0%	0	0.0%
Net Futures	1000000000	0	0.0%	0	0.0%
Gross Options	1000000000	0	0.0%	0	0.0%
Net Options	1000000000	0	0.0%	0	0.0%

Logged in Mar 22, 2021 10:44 AM



PTRM 1.0



ABC1234 ABC2345 ABCMM3456 ABCMM4567 are OAPI Sessions / HKATS Online Sessions for Trading.

ABCMM4567 is assigned to PTLG HKCABC_HKABCMM_1. ABC1234 ABC2345 ABCMM3456 are unassigned.

PTRM 1.0 – CP / GCP Access Rights

The access right of a PTRM Graphical User Interface (“PTRM GUI”) login session for a CP / GCP is full and these login sessions were defined in PTRM 1.0 as “Risk Limit Managers”.

		Prescribed Risk Controls		
Risk Limit Manager Login Session (CABC)	Visible PTLG	Automated Stop Functions Max Order Size Limits Max Order Rate Limits Max Intraday Exposure Limits	Manual Stop Functions Stop/ Unstop Unblock Kill Switch Mass Cancel	Email Alerts Notice Warn Breach Stop/ Kill Switch
	HKCABC_HKABC_BASE	Can modify all risk limits	Can access all emergency buttons of the manual stop functions	Can modify
Login Session 1 (CABC)	HKCABC_HKABCMM_BASE	Can modify all risk limits	Can access all emergency buttons of the manual stop functions	Can modify
	HKCABC_HKABCMM_1	Can modify all risk limits	Can access all emergency buttons of the manual stop functions	Can modify



PTRM 1.0 – EP / NCP Access Rights

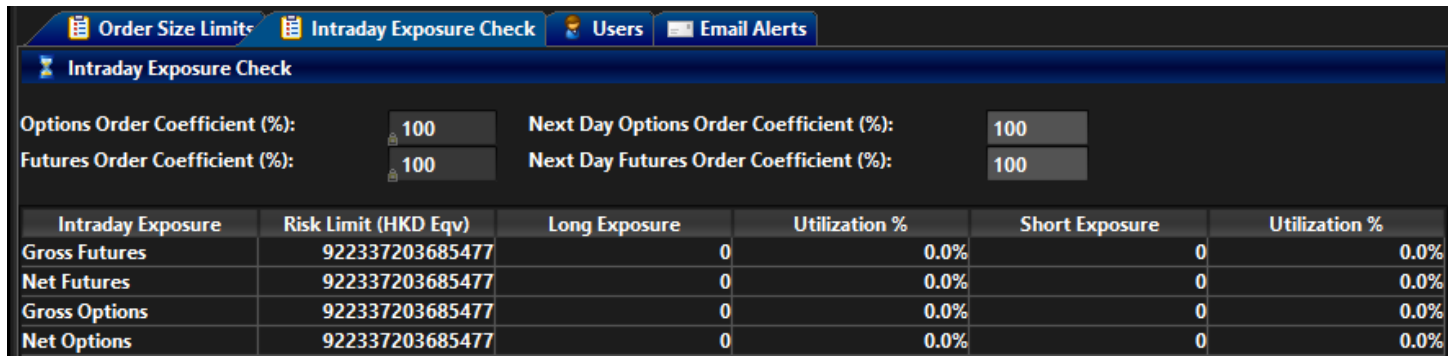
The access right of a PTRM Graphical User Interface (“PTRM GUI”) login session for an EP / NCP is partial and these login sessions were defined in PTRM 1.0 as “Trading Units”.

		Prescribed Risk Controls		
Trading Unit Login Session (ABC & ABCMM)	Visible PTLG	Automated Stop Functions Max Order Size Limits Max Order Rate Limits Max Intraday Exposure Limits	Manual Stop Functions Stop/ Unstop Unblock Kill Switch Mass Cancel	Email Alerts Notice Warn Breach Stop/ Kill Switch
Login Session 1 (ABC)	HKCABC_HKABC_BASE	Cannot modify	Stop, Kill Switch and Mass Cancel only Unblock / Unstop to be done by the CP / GCP	Cannot modify
Login Session 2 (ABCMM)	HKCABC_HKABCMM_BASE	Cannot modify	Stop, Kill Switch and Mass Cancel only Unblock / Unstop to be done by the CP / GCP	Cannot modify
	HKCABC_HKABCMM_1	Cannot modify	Stop, Kill Switch and Mass Cancel only Unblock / Unstop to be done by the CP / GCP	Cannot modify



PTRM 1.0 – Max. Intraday Exposure Limits

Maximum Intraday Exposure Check is at-trade – PTRM checking occurs after the order entering the order book.



Intraday Exposure	Risk Limit (HKD Eqv)	Long Exposure	Utilization %	Short Exposure	Utilization %
Gross Futures	922337203685477	0	0.0%	0	0.0%
Net Futures	922337203685477	0	0.0%	0	0.0%
Gross Options	922337203685477	0	0.0%	0	0.0%
Net Options	922337203685477	0	0.0%	0	0.0%

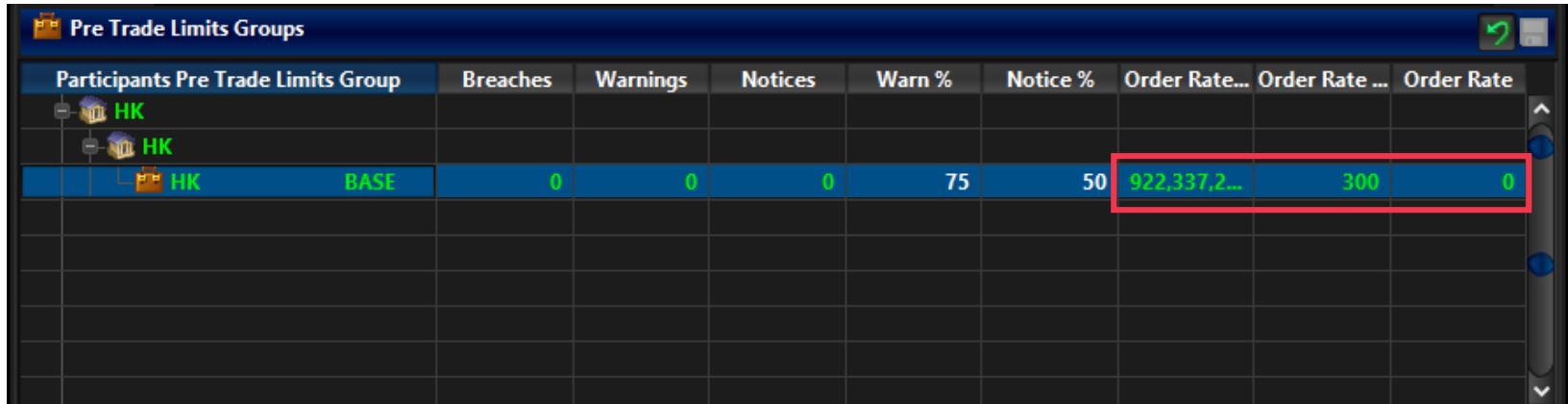
Note:

- Count each order and trade exposure by aggregating the respective Unit Margin Rate (“UMR”)
- Exposures will be aggregated for the whole business day (including T and T+1 Session) according to the prescribed formulas (Gross Futures Long / Short; Net Futures Long / Short; Gross Options Long / Short and Net Options Long / Short); Exposure counters will be re-set to 0 after the dayend
- Order exposure is adjustable from 0% to 100%; Order exposure will be released after order cancellation
- Blocking the PTLG upon any breach at 1 of the 4 limits; subsequent orders will be rejected
- OAPI order rejection message -850006



PTRM 1.0 – Max. Order Rate Limit

Maximum Order Rate Check is at-trade – PTRM checking occurs after the order entering the order book.



Participants Pre Trade Limits Group	Breaches	Warnings	Notices	Warn %	Notice %	Order Rate...	Order Rate ...	Order Rate
HK								
HK								
HK BASE	0	0	0	75	50	922,337,2...	300	0

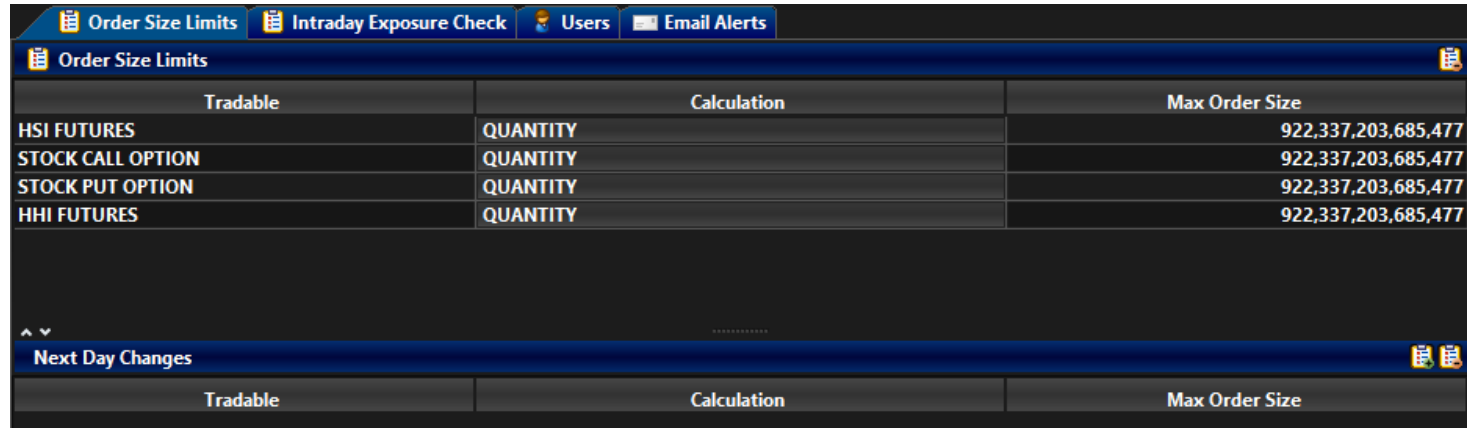
Note:

- Limit the number of orders within a user-defined period of time from 1 to 300 seconds
- Excluding Mass Quotes (MO96) and Block Trades; counting only Outright Orders (MO31) and Double-Sided Quotes (MO37)
- Blocking the PTLG upon a limit breach; subsequent orders will be rejected
- OAPI order rejection message -850004



PTRM 1.0 – Max. Order Size Limits

Maximum Order Size Check is pre-trade – PTRM checking occurs before the order entering the order book.



Tradable	Calculation	Max Order Size
HSI FUTURES	QUANTITY	922,337,203,685,477
STOCK CALL OPTION	QUANTITY	922,337,203,685,477
STOCK PUT OPTION	QUANTITY	922,337,203,685,477
HHI FUTURES	QUANTITY	922,337,203,685,477

Next Day Changes

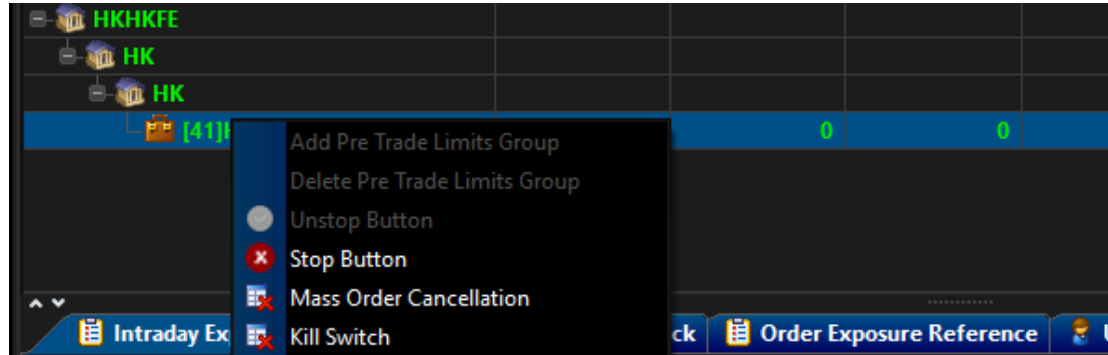
Tradable	Calculation	Max Order Size
----------	-------------	----------------

Note:

- Control upon the creation of the specific product tradables by users
- Working at the same time with Central Order Size Limits
- Excluding Combinations and Block Trades
- Order rejection only; PTLG blocking not applicable
- OAPI order rejection message -850008



PTRM 1.0 – Emergency Buttons



Stop	<ul style="list-style-type: none"> To stop a PTLG from order entering Allow order cancellation
Unstop	<ul style="list-style-type: none"> To allow again the order entering for a stopped PTLG
Unblock (Order Rate / Intraday Exposure)	<ul style="list-style-type: none"> To unblock a PTLG after a limit breach and subsequently blocked
Mass Order Cancellation	<ul style="list-style-type: none"> To cancel all outstanding orders of a PTLG
Kill Switch	<ul style="list-style-type: none"> To cancel all outstanding orders of a PTLG and stop the PTLG from order entering

Enhanced PTRM System (“PTRM 2.0”)



PTRM 2.0

All the following PTRM 1.0 settings, functions and risk limits will be retained / migrated:

- 1) All PTLGs defined by users and their assigned OAPI / HKATS Online Sessions
- 2) All Prescribed Risk Controls
- 3) All risk limits defined by users for all Prescribed Risk Controls
- 4) All product tradables defined by users per PTLG for Max. Order Size Check
- 5) All email addresses defined for receiving PTRM alerts
- 6) All PTRM reports (RX_UTIL & RX_AUDIT)
- 7) All PTRM GUI Login IDs, access rights (Risk Limit Managers & Trading Units) and passwords
- 8) PTRM GUI connectivity (PTRM GUI PC Hostname Tables, SDNET / HSN Circuits & PTRM Gateway Servers)



PTRM 2.0 - GUI

Genium INET TradeGuard

File Sound Help

Pre Trade Limits Groups Search:

Participants Pre Trade Limits Group	Breaches	Warnings	Notices	Pos Limits W...	Pos Limits N...	Order Rate L...	Order Rate P...	Order Rate
HK								
HK								
[21]HK BASE	0	0	0	75	50	15,000	300	0
HK								
[2]HK BASE	0	0	0	75	50	15,000	300	0

Intraday Exposure Check
Execution Throttle Check
Order Exposure Reference
Users
Email Alerts
Edit Limits
Position Limits

Intraday Exposure Check

Options Order Coefficient (%): Next Day Options Order Coefficient (%):

Futures Order Coefficient (%): Next Day Futures Order Coefficient (%):

Intraday Exposure Notice [%]: Intraday Exposure Warn [%]:

Intraday Exposure	Risk Limit (HKD Eqv)	Long Exposure	Utilization %	Short Exposure	Utilization %
Gross Futures	1,000,000,000	0	0.0%	0	0.0%
Net Futures	1,000,000,000	0	0.0%	0	0.0%
Gross Options	1,000,000,000	0	0.0%	0	0.0%
Net Options	1,000,000,000	0	0.0%	0	0.0%

Logged in Mar 22, 2021 10:40 AM



PTRM 2.0 – Functions Overview

Summary of PTRM 2.0 Prescribed Risk Controls

Prescribed Risk Controls	Remarks	Description
Execution Throttle Limits	<i>New functions!</i>	Initial limits will be set at 9,223,337,203,685,477
Intraday Position Limits		
Maximum Block Trade Size Limits		
Maximum Combo Size Limits		EPs have to add relevant Combo Tradables for the settings after the rollout
Order Exposure Reference Counter		New functions for EP's reference
Active User Reference Counter		
<ul style="list-style-type: none"> • Max. Intraday Exposure Limits • Max. Order Rate Limit • Max. Order Size Limits 	Existing functions to be retained	EP's current limit settings will be migrated to the new version
Emergency Buttons	Existing functions to be retained	Stop, Unstop, Mass Cancellation & Kill Switch



PTRM 2.0 – Execution Throttle Limits

Formula for exposure accumulation:

Execution Throttle Limits	Formula for Long / Short Risk Exposure Counters
Gross Futures Long / Short Limit	Long Counter - Traded Futures Long Quantity x Long UMR
	Short Counter - Traded Futures Short Quantity x Short UMR
Gross Options Long / Short Limit	Long Counter - (Bought Calls Quantity x Long UMR) + (Sold Puts Quantity x Short UMR)
	Short Counter - (Sold Calls Quantity x Short UMR) + (Bought Puts Quantity x Long UMR)

Configurable time range T:

300 to 600 seconds

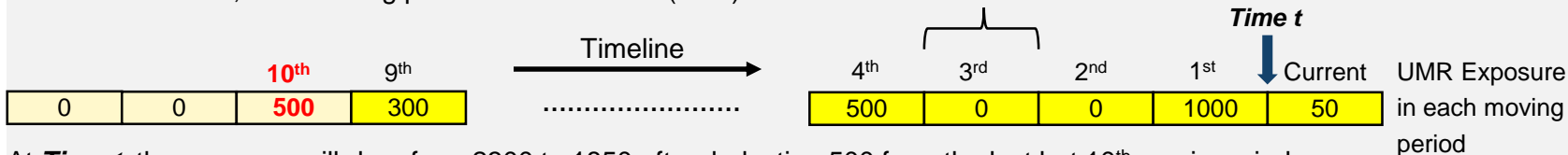
Counter Reset Frequency:

The exposure accumulated in the last but 10th T/10 moving period will be deducted continuously (a 10-moving window basis)

Example:

If T = 300 seconds, then moving period = 30 seconds (T/10)

Length of each moving period = T/10



At **Time t**, the exposure will drop from 2300 to 1850 after deducting 500 from the last but 10th moving window



PTRM 2.0 – Execution Throttle Limits

Execution Throttle Exposure Versus Maximum Intraday Exposure

Item	Maximum Intraday Exposure	Execution Throttle Exposure
Formula	Open Futures Long Quantity x Long UMR + Traded Futures Long Quantity x Long UMR	Traded Futures Long Quantity x Long UMR
	Open Futures Short Quantity x Short UMR + Traded Futures Short Quantity x Short UMR	Traded Futures Short Quantity x Short UMR
	(Open Buy Calls Quantity x Long UMR) + (Open Sell Puts Quantity x Short UMR) + (Bought Calls Quantity x Long UMR) + (Sold Puts Quantity x Short UMR)	(Bought Calls Quantity x Long UMR) + (Sold Puts Quantity x Short UMR)
	(Open Sell Calls Quantity x Short UMR) + (Open Buy Puts Quantity x Long UMR) + (Sold Calls Quantity x Short UMR) + (Bought Puts Quantity x Long UMR)	(Sold Calls Quantity x Short UMR) + (Bought Puts Quantity x Long UMR)
Reset Frequency	1 Business Day	User-Configurable 300 to 600 seconds on a 10-moving-window basis

Execution Throttle Limits designed to provide the user a more effective at-trade Prescribed Risk Control regarding a rapid UMR exposure building up within a short period of time for trades only (All Block Trade Exposures excluded)



PTRM 2.0 – Execution Throttle Limits

Intraday Exposure	Risk Limit (HKD Eqv)	Long Exposure	Utilization %	Short Exposure	Utilization %
Gross Futures Per Time	922,337,203,685,477	0	0.0%	0	0.0%
Gross Options Per Time	922,337,203,685,477	0	0.0%	0	0.0%

Remarks:

- The PTLG will be blocked upon a limit breach by any 1 of the 4 relevant Execution Throttle exposures
- Subsequent orders by the OAPI / HKATS Online Sessions assigned to the PTLG will be rejected
- New OAPI return code for the order rejection: (-850010) “User has exceeded Execution Throttle limit”
- To unblock, the user has to make an adjustment / wait until the relevant limit value > the relevant Execution Throttle exposure value as the condition for unblock
- New “Unblock execution throttle exposure” in the menu for Emergency Buttons will be undimmed once the condition for unblock is fulfilled



PTRM 2.0 – Intraday Position Limits

Order Size Limits | Intraday Exposure Check | Users | Email Alerts

Order Size Limits

Tradable	Calculation	Max Order Size
HSI FUTURES	QUANTITY	100
STOCK CALL OPTION	QUANTITY	500
STOCK PUT OPTION	QUANTITY	500
HHI FUTURES	QUANTITY	100

Next Day Changes **PTRM 1.0**

Tradable	Calculation	Max Order Size
----------	-------------	----------------

Intraday Exposure Check | Execution Throttle Check | Order Exposure Reference | Users | Email Alerts | Edit Limits | Position Limits

Edit Limits

Tradable	Calculation	Max Or...	Max Blo...	Open Buy	Open Sell	Traded ...	Traded ...	Traded ...	Total B...	Total Sell	Total ...	Total Net...	Bloc...	Bloc...
HSI FUTURES	QUANTITY	100	922,337...	922,337...	922,337...	922,33...	922,337...	922,337...	922,33...	922,337...	922,3...	922,337,...	922,...	922,...
STOCK CALL OPTION	QUANTITY	500	922,337...	922,337...	922,337...	922,33...	922,337...	922,337...	922,33...	922,337...	922,3...	922,337,...	922,...	922,...
STOCK PUT OPTION	QUANTITY	500	922,337...	922,337...	922,337...	922,33...	922,337...	922,337...	922,33...	922,337...	922,3...	922,337,...	922,...	922,...
HHI FUTURES	QUANTITY	100	922,337...	922,337...	922,337...	922,33...	922,337...	922,337...	922,33...	922,337...	922,3...	922,337,...	922,...	922,...

Next Day Changes **PTRM 2.0**

Tradable	Calculation	Max Or...	Max Blo...	Open Buy	Open Sell	Traded ...	Traded ...	Traded ...	Total Buy	Total Sell	Total Ne...	Total N...	Block Tr...	Block Tr...
----------	-------------	-----------	------------	----------	-----------	------------	------------	------------	-----------	------------	-------------	------------	-------------	-------------



PTRM 2.0 – Intraday Position Limits

Intraday Position Limits is an at-trade risk check at the product tradable level with the following risk limits and exposure counters for each product tradable:

Intraday Position Limits Counters	Formula
Open Buy	The current number of open contracts on the buy side (Exclude Block Trade)
Open Sell	The current number of open contracts on the sell side (Exclude Block Trade)
Traded Bought	The current number of traded contracts on the buy side (Exclude Block Trade)
Traded Sold	The current number of traded contracts on the sell side (Exclude Block Trade)
Total Buy	Open Buy + Traded Bought (Exclude Block Trade)
Total Sell	Open Sell + Traded Sold (Exclude Block Trade)
Traded Net	Absolute value of (Traded Bought – Traded Sold)
Total Net Buy	Open Buy + Traded Bought – Traded Sold (Exclude Block Trade)
Total Net Sell	Open Sell + Traded Sold – Traded Bought (Exclude Block Trade)
Block Trade Bought	The current number of traded block trade contracts on the buy side
Block Trade Sold	The current number of traded block trade contracts on the sell side

Intraday Position Limits count the exposure in term of the accumulated number of contracts by product tradables while Maximum Intraday Exposure Limits count the exposure in term of the accumulated UMRs by a mix of all product tradables



PTRM 2.0 – Intraday Position Limits

Position Limits												
Tradable	Calculation	Open Buy	Open Sell	Traded Bou...	Traded Sold	Traded Net	Total Buy	Total Sell	Total Net...	Total Net ...	Block Tr...	Block Tr...
HSI FUTURES	QUANTITY	0	0	0	0	0	0	0	0	0	0	0
STOCK CALL OPTION	QUANTITY	0	0	0	0	0	0	0	0	0	0	0
STOCK PUT OPTION	QUANTITY	0	0	0	0	0	0	0	0	0	0	0
HFI FUTURES	QUANTITY	0	0	0	0	0	0	0	0	0	0	0

Remarks:

- The product tradable will be blocked upon a limit breach by any 1 of the 11 relevant Intraday Position Limits exposures
- Subsequent orders of that product tradable by the OAPI / HKATS Online Sessions assigned to the PTLG will be rejected
- New OAPI return code for the order rejection: (-850014) “User has exceeded Position limit”
- To unblock, the user has to make an adjustment / wait until the relevant limit value > the relevant Intraday Position Limits exposure value as the condition for unblock
- New “Unblock Position Limit” in the menu for Emergency Buttons will be undimmed once the condition for unblock is fulfilled
- All Block Trade Exposures will be counted towards the BASE PTLG



PTRM 2.0 – Maximum Block Trade Size Limits

Intraday Exposure Check														Execution Throttle Check		Order Exposure Reference		Users		Email Alerts		Edit Limits		Position Limits	
Edit Limits																									
Tradable	Calculation	Max Or...	Max Blo...	Open Buy	Open Sell	Traded ...	Traded ...	Traded ...	Total B...	Total Sell	Total ...	Total Net...	Bloc...	Bloc...											
HSI FUTURES	QUANTITY	922,337...	922,337...	922,337...	922,337...	922,33...	922,337...	922,337...	922,33...	922,337...	922,3...	922,337,...	922,...	922,...											
STOCK CALL OPTION	QUANTITY	922,337...	922,337...	922,337...	922,337...	922,33...	922,337...	922,337...	922,33...	922,337...	922,3...	922,337,...	922,...	922,...											
STOCK PUT OPTION	QUANTITY	922,337...	922,337...	922,337...	922,337...	922,33...	922,337...	922,337...	922,33...	922,337...	922,3...	922,337,...	922,...	922,...											
HHI FUTURES	QUANTITY	922,337...	922,337...	922,337...	922,337...	922,33...	922,337...	922,337...	922,33...	922,337...	922,3...	922,337,...	922,...	922,...											

Next Day Changes														
Tradable	Calculation	Max Or...	Max Blo...	Open Buy	Open Sell	Traded ...	Traded ...	Traded ...	Total Buy	Total Sell	Total Ne...	Total N...	Block Tr...	Block Tr...

Remarks:

- Maximum Block Trade Size Limits control the block trade size per the corresponding product tradable setting. The sizes of block trade submitted by the OAPI / HKATS Online Sessions assigned to a PTLG are governed by the block trade size settings at that PTLG
- The check is pre-trade. Rejections for block trade size violations will occur before the reports being accepted
- New OAPI return code for the order rejection: (-850012) "User has exceeded Max. Block Trade Size limit"



PTRM 2.0 – Maximum Combo Size Limits

Intraday Exposure Check Execution Throttle Check Order Exposure Reference Users Email Alerts Edit Limits Position Limits														
Edit Limits														
Tradable	Calculation	Max Or...	Max Bl...	Open B...	Open S...	Traded ...	Traded ...	Traded...	Total ...	Total...	Total ...	Tota...	Bloc...	Bloc...
HHT - FUTURES	QUANTI...	922,33...	922,33...	922,33...	922,33...	922,33...	922,33...	922,33...	922,3...	922,...	922,3...	922,...	922,...	922,...
HHT FUT TIME SPREAD (S=1)	QUANTI...	922,33...	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
HHT FUT TIME SPREAD (S=2)	QUANTI...	922,33...	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
HHT FUT TIME SPREAD (S=3)	QUANTI...	922,33...	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
HHT FUT TIME SPREAD (S=4)	QUANTI...	922,33...	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
HHT FUT TIME SPREAD (S=5)	QUANTI...	922,33...	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
HHT FIIT TIME SPRFAD (S=6)	QUANTI...	922,33...	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Next Day Changes														
Tradable	Calculation	Max Or...	Max Blo...	Open Buy	Open Sell	Traded ...	Traded ...	Traded ...	Total Buy	Total Sell	Total Ne...	Total N...	Block Tr...	Block Tr...

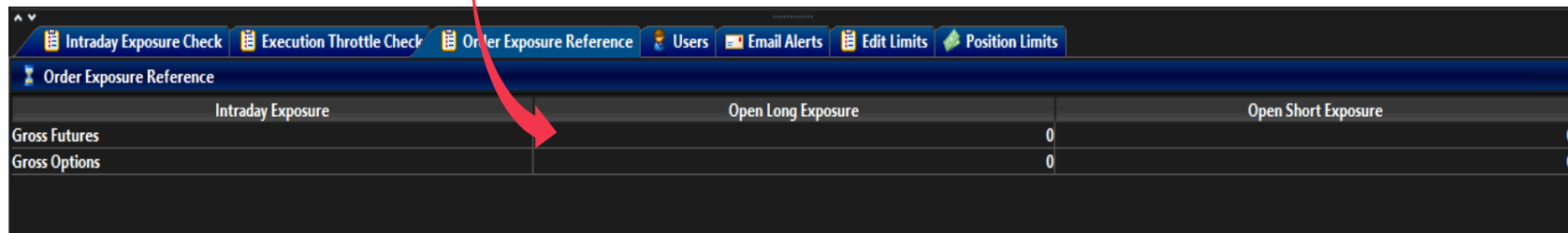
Remarks:

- Combos include Standard Combinations and Tailor-Made Combinations
- The user has to add the relevant combo tradables for combo order size restrictions
- The check is pre-trade. Rejections for combo size violations will occur before the orders being accepted
- Existing OAPI return code for the order rejection: (-850008) “User has exceeded Maximum Order Size Limit”



PTRM 2.0 – Order Exposure Reference Counter

Order Exposure Reference Counters	Formula
Gross Futures Long	Open Futures Long Quantity x Long UMR
Gross Futures Short	Open Futures Short Quantity x Short UMR
Gross Options Long	(Open Buy Calls Quantity x Long UMR) + (Open Sell Puts Quantity x Short UMR)
Gross Options Short	(Open Sell Calls Quantity x Short UMR) + (Open Buy Puts Quantity x Long UMR)



Intraday Exposure	Open Long Exposure	Open Short Exposure
Gross Futures	0	0
Gross Options	0	0

Remarks:

- The counters above count 100% order exposure irrespective of the current effective settings of Futures Order Coefficient (%) and Options Order Coefficient (%)
- The readings by Order Exposure Reference Counters are for reference only. EPs shall always refer back to their order books for outstanding order status confirmations



PTRM 2.0 – Active User Reference Counter

Participants Pre Trade Limits Group	Breaches	Warnings	Notices	Pos Limits W...	Pos Limits N...	Order Rate L...	Order Rate P...	Order Rate
HKHKFE								
HK								
HK								
[41] _BASE	0	0	0	75	50	922,337,20...	300	0

Remarks:

- Active User Reference Counter for a Base PTLG will be counting both the assigned and unassigned OAPI / HKATS Online Sessions



Technical Arrangements & Participant Readiness



Technical Arrangements & Participant Readiness

PTRM GUI Specifications (Recommended PC Requirement)

	Current Recommendation	Revised Recommendation
Processor	Intel Core i3-550 3.2GHz or Higher	Intel Core i3 6 th Generation 3.2GHz or Higher
RAM	4 GB	
Extra Storage	10GB	
Network Adapter	100Mbps full-duplex	
OS	Microsoft Windows 10 (64 bit)	
Layered Software	JAVA 8	
	See Java System Requirements: http://java.com/en/download/help/sysreq.xml	
	Anti-virus software	
Supporting Browser	Windows Google Chrome (Version to be advised and notified by HKEX to EPs from time to time)	
Bandwidth Usage	Less than 1 Mbps of existing SDNET/2 or HKEX Service Network circuit per session	Approximately 1 Mbps of existing SDNET/2 or HKEX Service Network circuit per session Note: Higher bandwidth consumption per PTRM GUI connection is estimated when more tradables are added (i.e., Instrument Tradables as per the current Maximum Order Size Limits)

Intraday Position Limits consume a higher amount of bandwidth for updating the relevant risk limits and counters if a large number of Instrument Tradables is created for more granular controls. It is **not** advised to leave the “Edit Limits” **or** the “Position Limits” tabs open to avoid unnecessary consumption in the bandwidth. The more the Instrument Tradables being added, the higher the PTRM GUI bandwidth consumption and display latency will be observed. It is estimated that an extra of 1Mbps of bandwidth per 40 Instrument Tradables defined per PTLG will be consumed when leaving the “Edit Limits” **or** the “Position Limits” tab open.



Technical Arrangements & Participant Readiness

OAPI Readiness

<p>(-850010) <u>New!</u> User has exceeded Execution Throttle limit</p>	<ul style="list-style-type: none"> User has breached an Execution Throttle Limit and the transaction is rejected.
<p>(-850012) <u>New!</u> User has exceeded Max. Block Trade Size limit</p>	<ul style="list-style-type: none"> User has breached a Max. Block Trade Size limit and the transaction is rejected.
<p>(-850014) <u>New!</u> User has exceeded Position limit</p>	<ul style="list-style-type: none"> User has exceeded an Intraday Position limits and the transaction is rejected.
<p>(-850002) <u>Existing</u> User is in a blocked Pre-trade Risk state</p>	<ul style="list-style-type: none"> Triggered by the “Stop Button” and the “Kill Switch”. User in a blocked Pre-Trade Risk State is not allowed to place any new order or order modification.
<p>(-850004) <u>Existing</u> User has breached Maximum Order Rate Limit</p>	<ul style="list-style-type: none"> User has breached “Maximum Order Rate Limit” and the order is rejected.
<p>(-850006) <u>Existing</u> User has breached Maximum Intraday Exposure Limit</p>	<ul style="list-style-type: none"> User has breached at least one “Maximum Intraday Exposure Limit” and the order is rejected.
<p>(-850008) <u>Existing</u> User has exceeded Maximum Order Size Limit</p>	<ul style="list-style-type: none"> User has exceeded “Maximum Order Size Limit” and the order is rejected.

EPs/ Vendors are strongly recommended to assess or test their OAPI readiness for the new OAPI return codes by utilising HKATS End-To-End Test Environment prior to the Market Rehearsal event. Details of the testing arrangement and schedule will be announced in due course



Technical Arrangements & Participant Readiness

PTRM GUI Training Sessions

HKEX will provide training sessions on the new PTRM functions to all EP nominated Risk Limit Manager and Trading Unit users tentatively in Q2 of 2021. All PTRM Authorized Persons are required to join the training sessions

Production Preparations & Market Rehearsals

- HKEX plan to conduct production readiness tests for the market in Q3 of 2021
- As the final preparation before the production rollout, Market Rehearsal will be conducted in Q3 of 2021. PTRM Authorized Persons from EPs will be required to participate in the Market Rehearsal to confirm and EPs shall declare their readiness prior to the rollout
- The Market Rehearsal is estimated and recommended to be a participation by EP/CP's PTRM Authorized Persons, trading and IT support colleagues
- PTRM Authorized Persons are advised to familiarize themselves as soon as possible with the current PTRM 1.0 login procedures and functions as soon as possible and before the market event
 - a) Login in with the designated **primary** URL, ports for PTRM 1.0 before the coming Market Rehearsal to ensure you know how to login to the HKEX PTRM system. Users are reminded to know also their designated **secondary** URLs and ports for the contingency login during a, e.g., site failover event. For details, please refer to Section 1.1.1 – Login Procedures of HKATS Risk Functions User's Guide
 - b) Familiarize yourselves with the current PTRM 1.0 functions and controls
 - c) Familiarize yourselves with the Java cache deletion procedure at your designated PTRM GUI PC

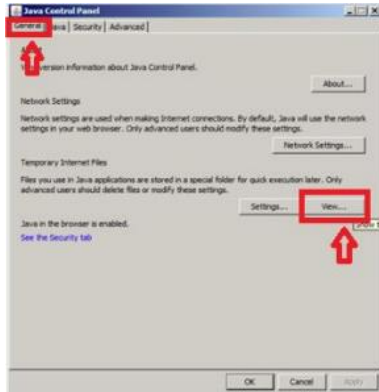


Technical Arrangements & Participant Readiness

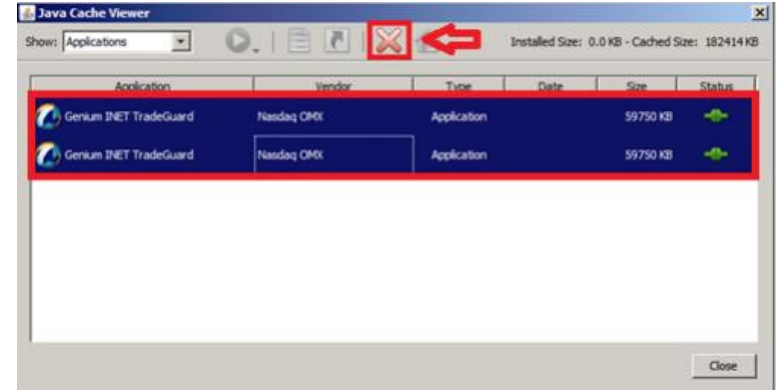
Java Cache Deletion

This is a necessary step to login the new PTRM 2.0 version during Market Rehearsal as well as logging in back to PTRM 1.0 after Market Rehearsal

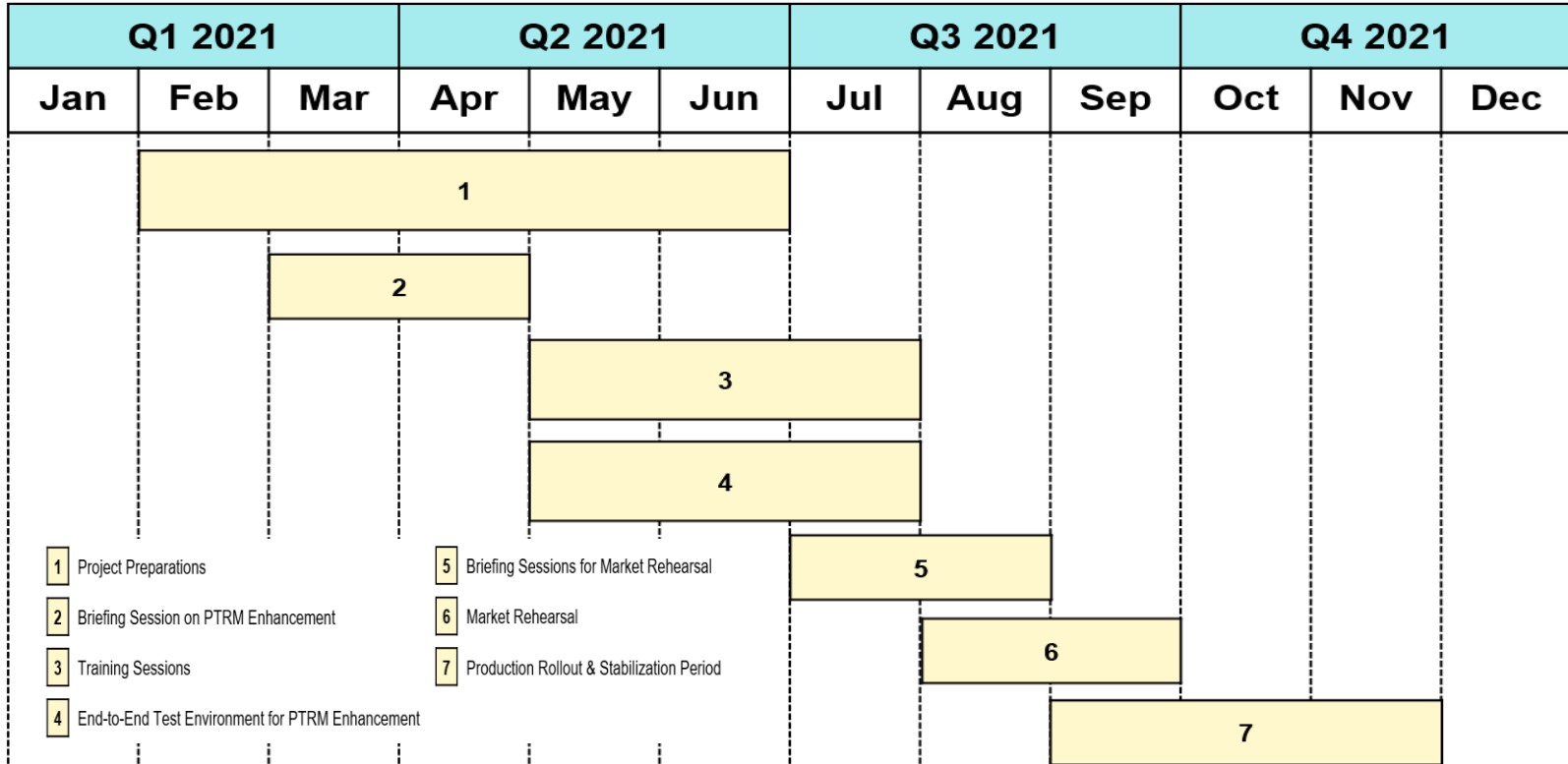
Go to “Java” in “Control Panel”



Select all related cache(s) and delete them



Technical Arrangements & Participant Readiness



Thank You

HKATS Hotline: (+852) 2211 6360

Email: deriopt@hkex.com.hk

