



Orion Risk Platform (ORP)
(Previously known as NextGen Risk Management (NGRM))

Familiarisation Programme

Information Package

for HKSCC¹ Clearing Participants

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¹ Hong Kong Securities Clearing Company Limited

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1 Introduction

Hong Kong Exchanges and Clearing Limited (HKEX) plans to launch a new single risk engine, Orion Risk Platform (ORP, previously known as NextGen Risk Management (NGRM)), for its Hong Kong securities market in second half of 2021. ORP is applicable to all Clearing Participants (CP) involving:

- (i) margin and stress testing of the new risk models (i.e. NextGen Risk Models) for the transactions in the Hong Kong Market;
- (ii) Default Fund contribution upon the launch of the new risk models; and
- (iii) a new platform, ORP, including the ORP system for risk related calculation and simulation plus the HKSCC Report Access Platform (RAP) for risk related reports retrieval.

In order to ensure a smooth transition to the new risk models with ORP, a familiarisation programme will take place in a phased approach to allow CPs to prepare and familiarise themselves with the new risk models and ORP before the business launch.

This Information Package aims to provide detailed information, to assist CPs to plan and prepare for different phases during the familiarisation programme. This Information Package will be updated on an on-going basis along with the development of the programme, therefore CPs should visit designated web page via [HKEX website](#) from time to time for information updates. Also, CPs are strongly advised to share this Information Package with their relevant teams, including IT / systems support teams / system vendors throughout the familiarisation programme.

2 Overview of Familiarisation Programme

The Familiarisation Programme will focus on the new risk based model for the transactions in the Hong Kong market, and aim to facilitate CPs to:

	Scope	Task	Tentative Schedule
Phase 1	Infrastructure	<ul style="list-style-type: none"> • setup RAP • verify RAP connectivity 	From 11 January 2021 until end of familiarisation programme
	Hong Kong market	<ul style="list-style-type: none"> • retrieve and study <ul style="list-style-type: none"> • new margin related reports calculated based on the new risk models • one-off margin analysis (<i>tentatively available from 8 Feb till end of Apr 2021</i>) 	
Phase 2	Infrastructure	<ul style="list-style-type: none"> • user maintenance of ORP system • verify ORP system connectivity 	Mid-2021 until end of familiarisation programme
	Hong Kong market	<ul style="list-style-type: none"> • retrieve stress testing and Default Fund contribution related reports • access ORP system for margin and stress testing simulation purpose 	

During the course of the Familiarisation Programme, CPs will be able to retrieve their margin, stress testing and Default Fund contributions information calculated based on the new risk models via RAP for reference, and compare such information against that calculated by the existing flat-rate model in CCASS. In phase 2, CPs will also be able to calculate the margin requirements for simulated portfolios created by CPs themselves based on the new risk models via the ORP system.

In order to provide sufficient time for CPs to understand the new risk models and system, the Familiarisation Programme will last for a few months. However, CPs are recommended to setup and verify their RAP connectivity as soon as possible, preferably before the end of February 2021. ORP reports generated before the completion of RAP setup and connectivity will be archived and will no longer be available for retrieval. CPs should also study and follow this information package to assess and prepare themselves for the implementation of the new risk models and ORP as soon as possible.

CPs should note that during the Familiarisation Programme, the ORP is not in commercial operation and should not be used in any commercial context or form. As such, the ORP and any output that can be obtained from such platform including

without limitation the new set of margin reports are, during the Familiarisation Programme, provided for familiarisation purposes only. CPs therefore should not rely on the ORP or any output from such platform in any way and should continue their normal risk management measures, prepare funding and make payments according to existing CCASS reports and schedule until the business implementation of the ORP and the new risk models.

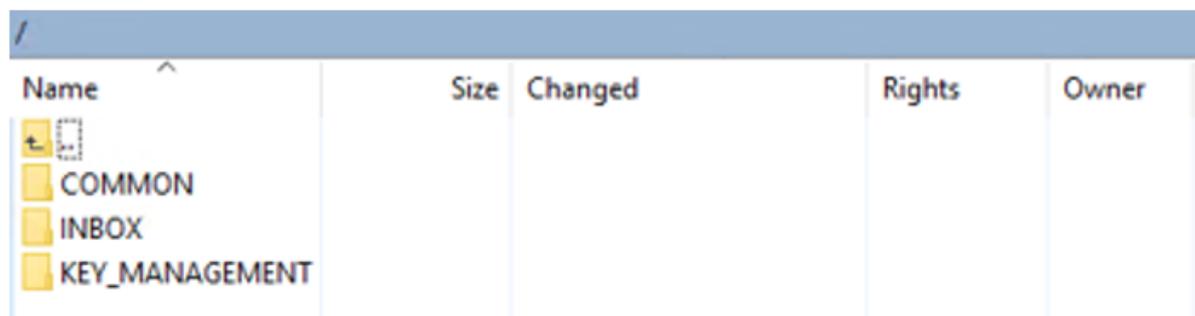
3 Phase 1

3.1 Verification of RAP Connectivity

New risk reports generated by ORP will be available for retrieval via RAP. RAP is a secure file transfer protocol (SFTP) platform for CPs to retrieve reports/files. CPs should setup a RAP account by submitting the [Registration Form for HKSCC Report Access Platform \(RAP\)](#) to HKEX via email by the end of February 2021 (if not already done), and arrange for necessary technical setup according to [HKSCC Report Access Platform \(RAP\) – Technical Guide](#) and [PC and Network Requirements](#).

During the initial stage of the familiarisation period, RAP will only be available for report retrieval from 14:00 to 19:00, every Monday, Wednesday and Friday. Subject to CPs' SFTP tools, an error message, such as "connection time out", will be prompted if CPs access RAP outside this period. It is planned to extend the RAP access window to all week days (except holidays) from 8 February 2021 onward. HKSCC will issue a circular on the update arrangement of the familiarisation programme. Each registered CP will be assigned with one RAP User ID. When connecting to RAP, please prevent concurrent logins, e.g. the "Number of simultaneous connections" or "Limit for concurrent download" should be set to "1" in the CP's selected SFTP program, as applicable.

Each CP can access the below folders:



Name	Size	Changed	Rights	Owner
COMMON				
INBOX				
KEY_MANAGEMENT				

- a. COMMON folder: contains reports common to all CPs

From 8 February 2021 onward and for RAP connectivity testing purposes, before the familiarisation programme provides any ORP reports into the COMMON folder, a sample file (the ORP report specification) will be available for retrieval in the COMMON folder. This sample file will only be available for retrieval from the "COMMON/YYYYMMDD" subfolder, where YYYYMMDD refers to every Monday from 8 February 2021 onwards during the familiarisation period. Where a Monday falls on a holiday, the sample file will be available in the date folder of the following business day. For example, for the week of 15

February 2021, the sample file will be available in the date folder as of 16 February 2021.

b. INBOX folder: contains reports specific to each individual CP only

ORP will generate a set of margin related data files for CPs to download from their INBOX folders. The margin reports will be available for retrieval from the “INBOX/YYYYMMDD” subfolder, where YYYYMMDD refers to the calendar day when RAP received the files. Please see section 3.2.4.

From 8 February to end of April 2021, the one-off tailor made initial impact analysis file will be available for each CP to retrieve. This analysis file will only be available for retrieval from the “INBOX/YYYYMMDD” subfolder, where YYYYMMDD refers to every Monday from 8 February 2021 during the familiarisation period. Please see section 3.2.6.

c. KEY MANAGEMENT folder: for CPs to submit public keys for renewal

This folder is for CPs to renew their public keys upon expiration or in case they have to change their public keys, which is not part of the scope of the familiarisation period. For details, refer to the [HKSCC Report Access Platform \(RAP\) – Technical Guide](#).

3.2 Study Margin Reports

To facilitate CPs to gain a better understanding of their potential initial margin (IM) and MTM (i.e. marks) requirements under the new portfolio margining model, starting from Phase 1 of the Familiarisation Programme, CPs can retrieve day end margin reports. Other day-end ORP reports such as Stress Testing Report, Default Fund Requirement Report will be available in Phase 2.

When ORP has been deployed into full business production, ORP will also provide intra-day reports. The information contained in these intra-day reports will be similar but not identical to the day-end reports. These intra-day reports will not be available during the Familiarisation Programme, but report specifications will be made available before the full launch.

3.2.1 Margin Reports

ORP will generate new reports, which will be available to CPs' to facilitate their risk management operations. During Phase 1 of the Familiarisation Programme, ORP will generate day-end versions of the following new margin related reports, each with a control file and a data file in csv format for CP:

- Marginable Position Report (RMAMP01)
- MTM and Margin Requirement Report (RMAMR01)
- MTM and Margin Requirement Report (Summary Version) (RMAMR03).

CPs are recommended to study the MTM and Margin Requirement Report (Summary Version) (RMAMR03), which provides a summary of the margin information, i.e. initial margin requirements, as well as MTM requirements and various margin information. CPs interested in the breakdowns of the MTM and margin requirements may refer to the MTM and Margin Requirement Report (RMAMR01).

CPs should have attended the NGRM Briefing and Workshop held in January 2020 about the infrastructural change, report change and new margin model. CPs can refer to the details via [HKEX website](#) which provides a full list of reports that will be available upon business launch of ORP. During the Familiarisation Programme, the focus will be on day-end initial margin and MTM requirements. The following add-on components will be shown as "0", CPs should disregard them during margin calculation:

- holiday add-ons
- credit risk add-ons
- position limit add-ons
- ad-hoc add-ons
- default fund add-ons.

3.2.2 NCPs information for GCPs

To facilitate GCPs estimating the MTM and initial margin requirements with respect to their NCPs at the end of each day, ORP will also estimate MTM and initial margin requirements for individual NCPs and house accounts of each GCP based on their corresponding netted marginable positions.

Day-end margin reports available during Familiarisation Programme will carry the following NCPs information:

- a. *Marginable Position Report (RMAMP01)*: the marginable positions of their NCPs and GCP house accounts
- b. *MTM and Margin Requirement Report (RMAMR01 & RMAMR03)*: the estimated MTM and initial margin requirements (including re-allocation of corresponding add-on).

Although ORP re-allocates the add-on from MA1 account (details please refer to the report specification) to individual NCPs at specified time, the margin calculation methodology of ORP covers position netting across settlement days and components which can only be captured and identified at participant level (meaning not captured within each NCP and house account of the GCP.) For example, components like overdue positions and cash prepayments will be captured and identified at participant level but cannot be further allocated among NCPs.

Therefore, it is not expected that the sum of the estimated MTM and initial margin requirements of individual NCPs and GCP house will be the same as the main account. GCPs can study the estimated amounts provided at NCP's level and GCP house during this Familiarisation Programme to understand the re-allocation mechanism.

These margin reports will also be available during intra-day after business launch of ORP. However, the information captured in the intra-day reports will depend on the snapshot of marginable positions and margin parameters requirement in the ORP. Thus, GCPs should not compare the day-end versions of the margin reports with the intra-day versions upon the business launch.

3.2.3 Study and Comparing Margin Reports with existing CCASS Reports

After retrieval, CPs are advised to study these new day-end ORP reports with reference to the corresponding CCASS reports in order to understand and assess the potential change in funding and liquidity requirements based on the new portfolio margining model. CPs should ensure they have downloaded and backed up their existing CCASS reports throughout the Familiarisation Programme to facilitate their assessment and comparison. The following are the key CCASS

reports for reference and comparison during the initial stage of the Phase 1 of the Familiarisation Programme:

- Marks and Collateral Collection Report (CFIPM01)
- Margin payable Report (CRMMG02)
- NCP Marks Projection Report (CRMNP02)
- NCP Margin Projection Report (CRMNP04).

CP should refer to the ORP report specifications and the comparison guidelines available via [HKEX website](#) for details.

3.2.4 Retrieval of Margin Reports from RAP

These new ORP csv files, together with the control files, will be available for retrieval in each CP's "INBOX/ YYYYMMDD" subfolder, where YYYYMMDD refers to the date when RAP received the files for CPs' retrieval. RAP stores files for 10 calendar days. CPs are therefore recommended to retrieve their csv files once available.

Name	Size	Changed	Rights
RMAMR03_Part ID _20201217205602.CSV.ZIP	2 KB	17/12/2020 9:14:31 PM	rwxr-xr-x
RMAMR03_Part ID _20201217205602.CNTL.ZIP	1 KB	17/12/2020 9:06:58 PM	rwxr-xr-x
RMAMR01_Part ID _20201217205602.CSV.ZIP	2 KB	17/12/2020 9:09:23 PM	rwxr-xr-x
RMAMR01_Part ID _20201217205602.CNTL.ZIP	1 KB	17/12/2020 9:09:24 PM	rwxr-xr-x
RMAMP01_Part ID _20201217205602.CSV.ZIP	2 KB	17/12/2020 9:10:45 PM	rwxr-xr-x
RMAMP01_Part ID _20201217205602.CNTL.ZIP	1 KB	17/12/2020 9:10:47 PM	rwxr-xr-x

As specified above, during initial stage of the Familiarisation Programme, RAP will only be available from 14:00 to 19:00 on every Monday, Wednesday and Friday. For easy reference, the availability of csv files during January 2021 is illustrated below:

RAP available on	Availability of csv files (dated as of January 2021)																	
	6	7	8	11	12	13	14	15	18	19	20	21	22	25	26	27	28	29
11 January 2021	✓	✓	✓															
13 January 2021	✓	✓	✓	✓	✓													
15 January 2021	✓	✓	✓	✓	✓	✓	✓	✓										
18 January 2021			✓	✓	✓	✓	✓	✓										
20 January 2021				✓	✓	✓	✓	✓	✓	✓								
22 January 2021					✓	✓	✓	✓	✓	✓	✓	✓						
25 January 2021								✓	✓	✓	✓	✓	✓					
27 January 2021									✓	✓	✓	✓	✓	✓	✓			
29 January 2021										✓	✓	✓	✓	✓	✓	✓	✓	✓

3.2.5 Specific Information for CPs when studying the ORP Margin Reports

CPs should take note of the following when studying the ORP margin reports:

- a. The same margin credit will be applicable to both the current risk model in CCASS, as well as the new risk models in ORP.
- b. The margin multiplier specific for the new risk models will be shown as “Flat Rate Margin Multiplier” in the MTM and Margin Requirement Report (RMAMR01); which may be different to the one use in CCASS.

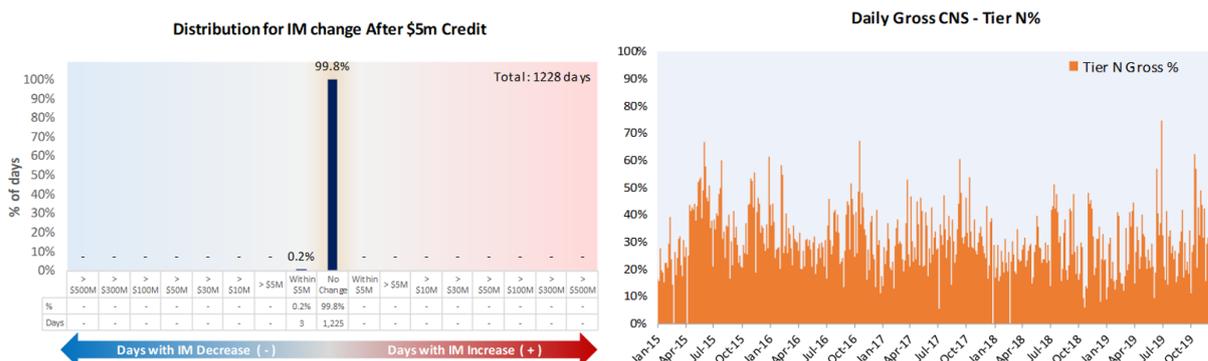
3.2.6 One-off Margin Analysis

A high-level initial margin impact analysis based on each CP’s own historical CNS portfolio from the beginning of 2015 to the end of 2020 will be generated and made available for retrieval via RAP from 8 February to the end of April 2021.

This margin analysis is CP specific, and will be available for retrieval from each CPs’ “INBOX/YYYYMMDD” subfolder. Because RAP purges files after 10 calendar days, the same margin analysis will be placed in CPs’ INBOX every Monday from 8 February to the end of April 2021. Where a Monday falls on a holiday, the sample file will be available in the date folder of the following business day (for example, for the week of 15 February 2021, the sample file will be available in the date folder as of 16 February 2021). Please note that there is only one margin analysis per CP, so it only needs to be retrieved once. The file name will be “Margin-Analysis-Dashboard_<Part ID>.pdf”

The Margin Analysis covers the following:

- a. Daily Gross CNS % for Tier N positions
- b. Distribution in the form of histogram for IM Change (with the new flat rate margin multiplier after HKD5 million IM credit), with reference to new risk models vs current risk model – entire portfolio.



4 Phase 2

HKSCC will provide more details in second quarter of 2021. Below are the high level details of Phase 2 of the Familiarisation Programme:

4.1 Setup user to access ORP system

The ORP system will be available for CPs to access from mid-2021. CPs should appoint at least one Delegated Administrator (DA) user to setup and maintain their designated users for accessing ORP system.

Application for DA to access ORP system and respective DA user guide will be available in Q2 2021.

4.2 Practice Margin and Stress Testing Simulation via ORP system

CPs can practice the online functions and estimate their margin and stress testing results by conducting margin and stress testing simulation based on production portfolios together with hypothetical trades via the ORP system. The related ORP system user guide will be available in Q2 2021.

4.3 Developing own risk management tools

CPs who opt to develop their own risk management tools, may develop their tools at their own pace. CPs should refer to the [Initial Margin Calculation Guide](#) and [Stress Test Value Calculation Guide](#) to develop and verify their tools and results.

4.4 Study Default Fund Reports

Similar to the margin reports under section 3, the ORP system will perform stress testing calculations and default fund allocations based on the new risk-based approach, and generate new default fund reports in csv format for each CP. CPs should make reference to the corresponding CCASS reports in order to understand the potential change in their default fund requirement.

The default fund reports and respective report specifications will be made available at a later stage.

5 Important Notes

CPs should note that during the Familiarisation Programme, the ORP is not in commercial operation and should not be used in any commercial context or form. As such, the ORP and any output that can be obtained from such platform including without limitation the new set of margin reports are, during the Familiarisation Programme, provided for familiarisation purposes only. CPs therefore should not rely on the ORP or any output from such platform in any way and should continue their normal risk management measures, prepare funding and make payments according to existing CCASS reports and schedule until the business implementation of the ORP and the new risk models.

The business implementation is tentatively scheduled in the second half of 2021, subject to the completion of the Familiarisation Programme, market rehearsals and regulatory approval. This document will be updated on an on-going basis during the familiarisation period to provide the latest information.

For effective communication, HKSCC will provide regular updates, latest information and upcoming activities directly to your nominated Project Coordinators. In case you are yet to nominate your Project Coordinators (recommend to nominate two, i.e. Primary and Secondary contacts), or wish to update the Project Coordinators, please send an email to NG_PostTrade@hkex.com.hk with your Participant ID, the names, titles, emails and contact numbers of your nominated Project Coordinators at once.

For any enquiries about the ORP and or the Familiarisation Programme, please contact email at NG_PostTrade@HKEX.COM.HK or ORP Hotline at +852 2211 6828 during office hours from 9:00 a.m. to 6:00 p.m. (Mondays to Fridays, excluding public holidays).

6 Checklist

Items to be checked		✓
1	Have you read and understood this document (“ORP Familiarisation Programme Information Package for Clearing Participants”)?	
2	Have you studied the ORP material available via HKEX website ?	
3	Have you provided HKEX with your updated designated Project Coordinator(s) including mobile phone number(s) and email address(s)?	
4	Have you passed this document and relevant information to your internal IT / system support teams and/or system vendor and ensured that they will provide necessary support?	
5	Are you aware that you should continue to rely on CCASS reports for margin payment obligation?	
6	Are you aware that you can only kick off the ORP report download via RAP after you have completed RAP setup and verified the RAP connectivity?	
7	Have you registered RAP user ID?	
8	Have you completed the RAP setup and verified the RAP connectivity?	
9	Have you downloaded and backed up your existing CCASS reports and the new risk reports (files) properly for reference and comparison?	
10	Have you arranged regular monitoring of latest ORP information available via HKEX website ?	

7 Appendix

Seminars was held in 2019 and 2020 to introduce the new risk margin models, the relevant material is available via [HKEX website](#). Extracted below are the high-level descriptions of the initial margin model for CPs' easy reference.

1. Methodology and parameters

	Current model		Next Generation Risk Models	
			Tier P	Tier N
1 Margin methodology	<ul style="list-style-type: none"> One margin rate based on HSI Margin multiplier where appropriate 		<ul style="list-style-type: none"> Instrument-specific VaR based 1000-day lookback period with stress dates 	<ul style="list-style-type: none"> One margin rate based on a reference market index Margin multiplier where appropriate
2 Portfolio margining	<ul style="list-style-type: none"> Nil (higher of long / short CNS positions) 		<ul style="list-style-type: none"> Offset between long / short CNS positions 	<ul style="list-style-type: none"> Nil (higher of long / short CNS positions)
3 Implied volatility modelling for DW/CBBC	<ul style="list-style-type: none"> Nil 		<ul style="list-style-type: none"> DW / CBBC pricing models 	<ul style="list-style-type: none"> Nil
4 Margin floor	<ul style="list-style-type: none"> 5% x higher of long / short CNS positions 		<ul style="list-style-type: none"> [2.5]% x higher of long / short CNS positions 	<ul style="list-style-type: none"> [10]% x higher of long / short CNS positions
5 Margin period of risk (MPOR)	<ul style="list-style-type: none"> 1 day liquidation period 		<ul style="list-style-type: none"> 1 day liquidation period 	<ul style="list-style-type: none"> No change

Figures in [] are for illustration purposes only, subject to regulatory approval.

2. Add-ons

	Current model		Next Generation Risk Models	
			Tier P	Tier N
IM Add-on	6 Liquidation Risk Add-on	<ul style="list-style-type: none"> Covered under the single margin rate e.g. 6% and concentration collateral 	<ul style="list-style-type: none"> Portfolio level Instrument level 	<ul style="list-style-type: none"> ~2% higher of Long / Short
	7 Structured Product Add-on		<ul style="list-style-type: none"> Applicable to long positions 	<ul style="list-style-type: none"> Not applicable
	8 Corporate Action Add-on		<ul style="list-style-type: none"> Rights / open offer / Distribution in specie 	<ul style="list-style-type: none"> Rights / open offer / Distribution in specie
Existing	9 Position Limit Add-on	<ul style="list-style-type: none"> Overall CNS exceeds 4 x Liquid Capital 	<ul style="list-style-type: none"> Overall CNS exceeds 4 x Liquid Capital 	<ul style="list-style-type: none"> No change
	10 Default Fund Add-on	<ul style="list-style-type: none"> CP's Net Projected Loss exceeds 50% DF threshold⁽¹⁾ 	<ul style="list-style-type: none"> CP's Net Projected Loss exceeds 50% DF threshold 	<ul style="list-style-type: none"> No change

(1) Default Fund (DF) Threshold is the maximum DF size(s) prescribed by the clearing house(s) with reference to the highest DF size in the past 10 years.

3. Operations-related arrangement

	Current model	Next Generation Risk Models
1 Tolerance limit (intraday)	■ HK\$5 million (applicable to Marks only)	■ HK\$5 million (available to both Marks and Margin)
2 Marks credit limit	■ Same as DF Basic Contribution	■ Not available ¹
3 IM credit	■ HK\$5 million	■ HK\$5 million <i>No change</i>
4 Favourable Marks-IM offset	■ Available	■ Available <i>No change</i>
5 Intraday Margin for Holiday	■ Applicable to holiday periods > one business day	■ Applicable to holiday periods > one business day <i>No change</i>
6 Intraday and Dayend Marks	■ ~11:00 and ~19:30	■ ~11:00 and ~19:30 <i>No change</i>
7 IM refund for offset cash prepayment	■ Available	■ Not available ²
8 Periodic Margin projection / report	■ 14:45, 15:45, 16:30, 20:00	■ 16:30, 20:00 + flexibility to simulate IM requirement intra-day

(1) Enhance default capital adequacy by isolation of Default Fund resources

(2) Advance IM refund will create potential exposure for unsettled short positions