February 2017

HKEX

香 港 交 易 所

INFORMATION PAPER

HKEX ORION TRADING PLATFORM
- SECURITIES MARKET

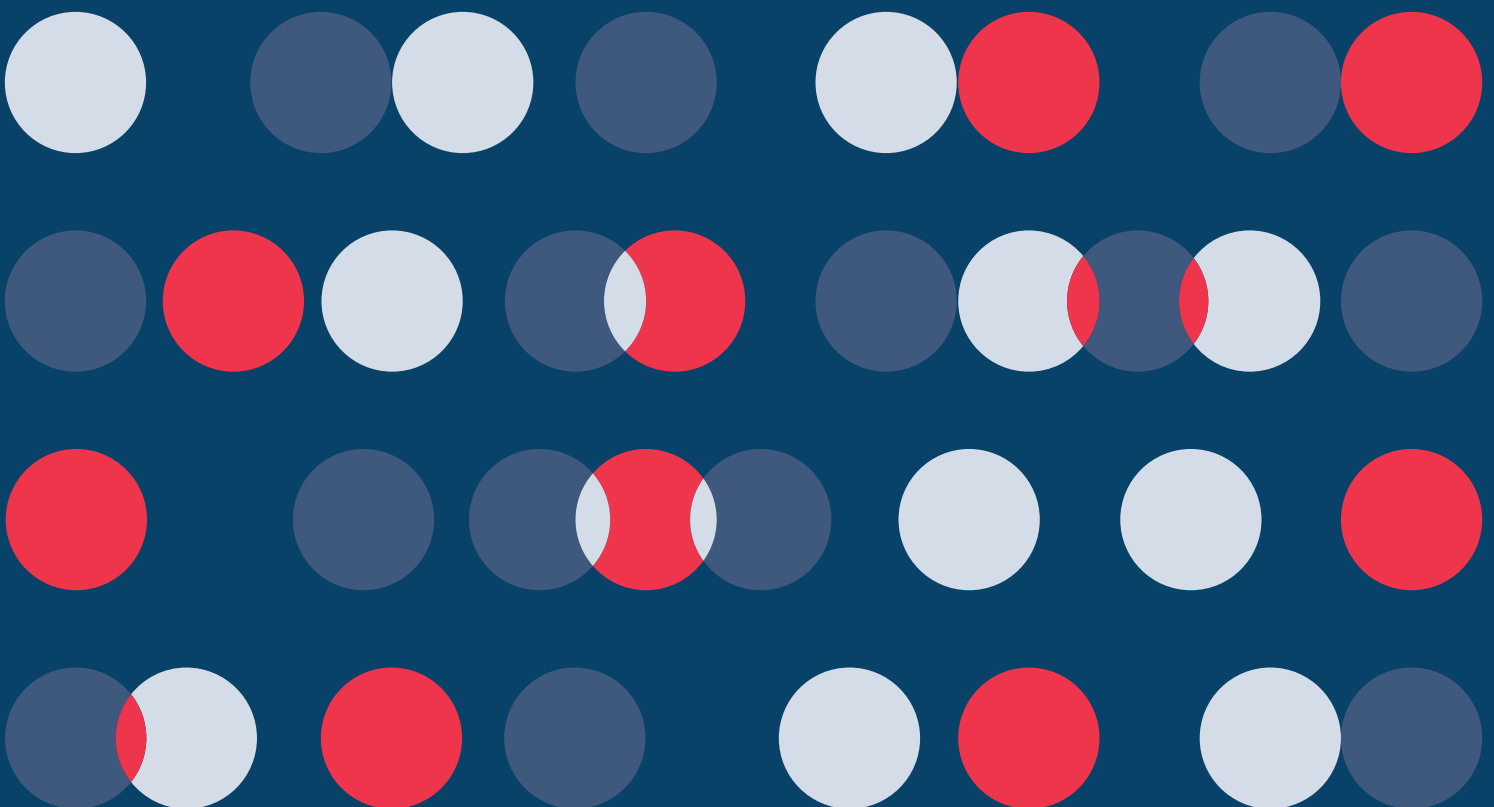# TABLE OF CONTENTS

Version Date: 27 Feb 2017

SECTION 1: INTRODUCTION

1   In 2012, HKEX embarked upon the "HKEX Orion Technology Initiatives" programme, which was a major transformation of its technology infrastructure.   The programme included transforming data centres, networks, as well as the core trading infrastructure. The programme represents a significant re-investment aimed at maintaining and enhancing Hong Kong's position as a leading international financial centre.

2   The HKEX cash market transformation is structured as a phased migration from the legacy trading system infrastructure to the target infrastructure as illustrated below:
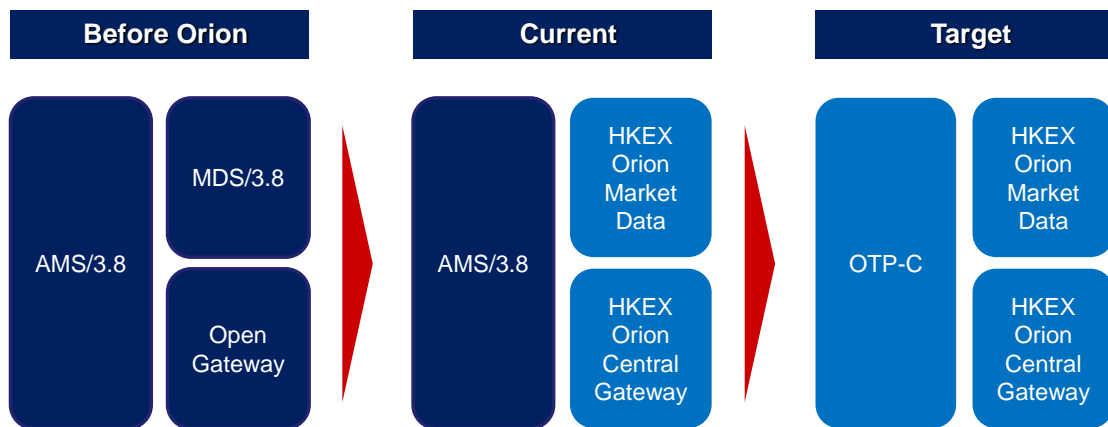
3   The migration strategy is designed to deliver the following benefits to market participants in the first two phases:

Phase 1:   Orion Market Data – Securities Market (OMD-C) – launched in 2013, OMD-C provides a range of market data products to meet the different needs of market participants.

Phase 2:   Orion Central Gateway (OCG) – launched in 2014, OCG provides a centralised trading access point for Exchange Participants (EPs), eliminating significant costs inherent in the legacy distributed architecture, and adding features such as drop copy and cancel-on-disconnect.

4   The final phase of the transformation is the replacement of the legacy AMS/3.8 back-end trading engine with the Orion Trading Platform – Securities Market (OTP-C). Even though AMS/3.8 has been over the years resilient and reliable and has served the needs of the Hong Kong securities market well, this core cash equity trading engine is increasingly constrained by the proprietary technology in use.   To meet the evolving business needs and future market growth, a scalable, flexible and high performing cash equity trading platform based on open systems technology is required for Hong Kong securities market, which OTP-C aims to offer.   After OTP-C replaces the current system, new and enhanced business functionalities could be introduced to OTP-C in phases in the future, subject to the needs and priorities of market participants.

5   Technically, the migration to OTP-C is designed to be a low impact transition for market participants as the rollout mainly involves changes to HKEX's host system.   Market participants are shielded from OTP-C by OMD-C and OCG, whose interfaces will be unchanged.   OTP-C is functionally equivalent to AMS/3.8 with some minor enhancements introduced.   The details of the changes are explained in Section 2 below.

6   OTP-C will be tentatively rolled out in late Q4 2017, subject to market readiness and relevant regulatory approvals.   All EPs are required to validate their systems in accordance with OTP-C implementation timeline.

7   This information paper presents an overview of OTP-C trading platform, highlights the impact on EPs and OMD-C Clients[1] so that necessary preparations can be made, and provides further high-level implementation details of the initiative.   The detailed technical specifications of OCG are published separately at OTP-C project corner.

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[1] "OMD-C Clients" refers to information vendors, application service providers and end-users who have entered into a licence agreement with HKEX Information Services (HKEX-IS) to receive market data from OMD-C.

SECTION 2: OVERVIEW OF OTP-C

8   The high level description of the minor functional enhancements to be introduced with OTP-C are summarised in this section.   Further details are available in Appendix.

Minor Enhancements in Trading Functionality

9   Some minor enhancements in the trading functions will be introduced including the ability for EPs to modify non-price/non-quantity related order attributes during specific trading periods, and enhancements related to the cancellation of special lot/odd lot orders by using the existing OCG messages.

Carryover of New Enhancements in AMS/3.8

10   Should there be any new enhancements made on AMS/3.8 before the rollout of OTP-C, such enhancements will also be included in the implementation of OTP-C (e.g. Phase 2 implementation of CAS) unless otherwise stated.

SECTION 3: IMPACT ON EPs AND OMD-C Clients

11   Migration to OTP-C is mandatory to all EPs and OMD-C Clients.   EPs and OMD-C Clients should therefore plan ahead for the necessary testing effort in accordance with the OTP-C implementation schedule.

No Change to OCG Interface, Throttling Mechanism and Capacity

12   OTP-C upgrade will not introduce any changes to OCG in terms of its interface with EPs, the throttling mechanism, and the capacity per OCG order flow session.

No Change to OMD-C Message Dissemination Protocol

13   OTP-C upgrade will not introduce any changes to OMD-C in terms of its interface with EPs and message dissemination protocol.   OMD-C Clients are requested to note that the multicast channels for the dissemination of a small number of existing OMD-C messages will be changed after OTP-C goes live.   Full details will be provided in the OMD-C Connectivity Guide in Q2 2017.

Minor Enhancements in Trading Functionality

14   EPs and Broker Supplied Systems (BSS) vendors are requested to take note of the enhancements summarised in Appendix.   These minor enhancements are not essential and not mandatory for securities trading.   Therefore EPs and BSS vendors are not required to modify their BSS if they decide not to utilise these minor enhanced features.

Participation in Testing

15   All EPs should participate in all conformance tests to ensure their systems interfacing with OCG will function properly with OTP-C whereas OMD-C Clients are required to participate in the market rehearsals to ensure their systems interfacing with OMD-C will remain intact upon the launch of OTP-C.   The details of the test arrangements are explained in Section 4.

SECTION 4: IMPLEMENTATION

Publication of Interface Specifications

16   The OCG Interface Specifications are available at [OTP-C project corner](). The update is required to clarify the "mass order cancellation" and "OBO single order cancellation" functionalities.

Briefing Sessions

17   In order to enable EPs to have a better understanding on the implementation schedule of OTP-C, a series of briefing sessions for EPs will be conducted in Q1 2017.

OCG and OMD-C Offline Simulation Tests

18   Testing with an offline OCG simulator is not required as there is no change in the OCG interface. For OMD-C, an Offline Simulator Tool including canned data will be provided in Q2 2017 for OMD-C Clients to experience the effect of the change of dissemination channels. Clients should test run their applications with the Offline Simulator Tool to ensure their readiness before joining the market rehearsals.

End-to-End (E2E) Tests

19   All EPs having BSS connecting to OCG should participate in the E2E test session to validate their BSS software's ability to interact with OTP-C. An E2E testing environment of OCG and OMD-C connecting with OTP-C will be offered in late Q2 2017. EPs can connect their systems to the E2E testing environment, an environment similar to the target production environment, to verify their systems against OTP-C. Details of E2E testing will be provided at a later stage.

Market Rehearsals

20   As the final preparation and verification of readiness before production rollout, market rehearsals will be conducted over a number of weekends in Q4 2017. All EPs and OMD-C Clients are required to join the market rehearsals to verify their system compatibility.

Rollout of OTP-C and the Stabilisation Period

21   OTP-C will be tentatively rolled out in late Q4 2017. As in all other major system upgrades, there will be a stabilisation period for OTP-C after launch. During the stabilisation period, in case of emergency, fallback from OTP-C to AMS/3.8 may be required.

Implementation Schedule

22   The tentative implementation schedule of OTP-C is summarised as follows:
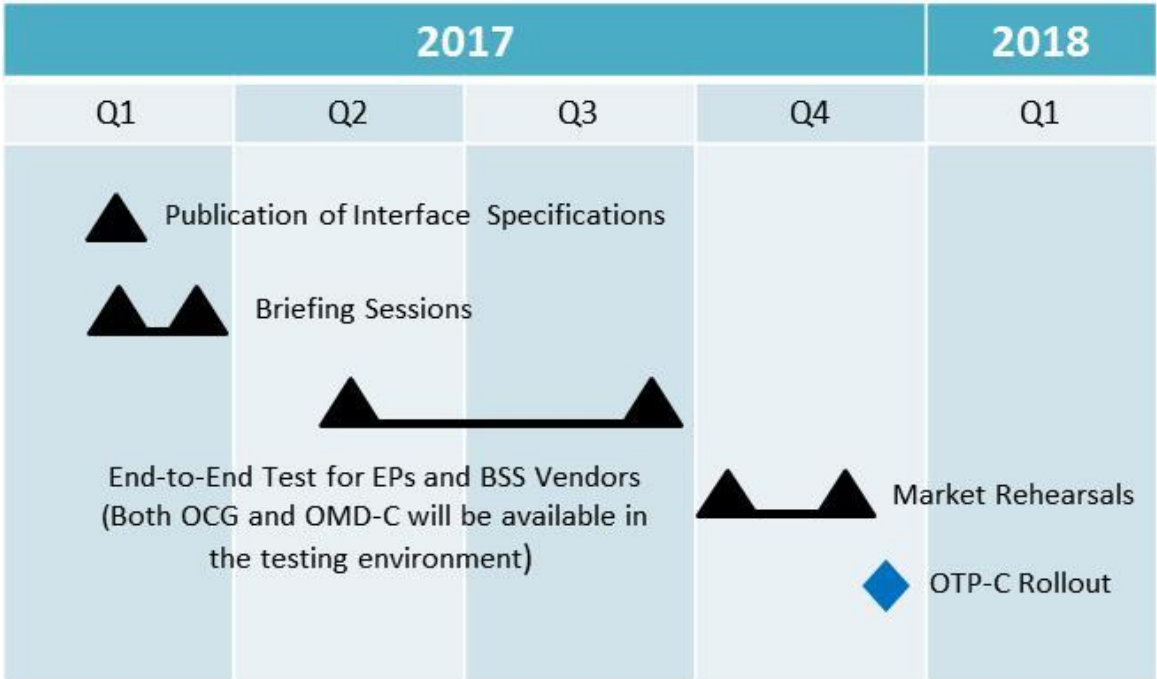
SECTION 5: ENQUIRIES

23   For queries and further clarification on the HKEX Orion Trading Platform – Securities Market, please email OTPC@hkex.com.hk or write to:

> Hong Kong Exchanges and Clearing Limited
>
> 6th Floor, Two Exchange Square
>
> 8 Connaught Place
>
> Central
>
> Hong Kong
>
> Re: Information Paper on HKEX Orion Trading Platform – Securities Market

24   EPs and BSS vendors are welcomed to contact the HKEX BSS Support Team (BSSSupport@hkex.com.hk) for clarification on OCG Interface Specifications.

25   For enquiries about OMD-C, please contact HKEX-IS (IVSupport@hkex.com.hk).

26   For future project updates, please refer to OTP-C project corner at HKEX website http://www.hkex.com.hk/OTPC.

APPENDIX: SUMMARY OF ENHANCEMENTS

Minor Enhancements in Trading Functionality

Enhancements	Description
Allow changing the non-price/non-quantity related attributes of an order in Pre-Order Matching/No Cancellation/Random Closing Periods	- Changing non-price/non-quantity related attributes of an order will be allowed in • Pre-Order Matching Period of Pre-Opening Session • No Cancellation Period and Random Closing Period of Closing Auction Session. - Example of non-price/non-quantity related attributes: • Order Capacity • Short Sell Indication • Broker Comment • Broker Location ID • Disclosure Instruction
Enhancements of the existing "mass order cancellation" and "OBO single order cancellation" functions	- In AMS/3.8, "mass order cancellation" cannot cancel special/odd lot orders. In OTP-C, "mass order cancellation" will cancel all orders including board lot, special lot and odd lot orders. - In AMS/3.8, "OBO single order cancellation" cannot cancel special/odd lot orders. In OTP-C, "OBO single order cancellation" can cancel all kinds of orders including board lot, special lot or odd lot orders.