

# HKEx Orion Leading Hong Kong's Next Transformation

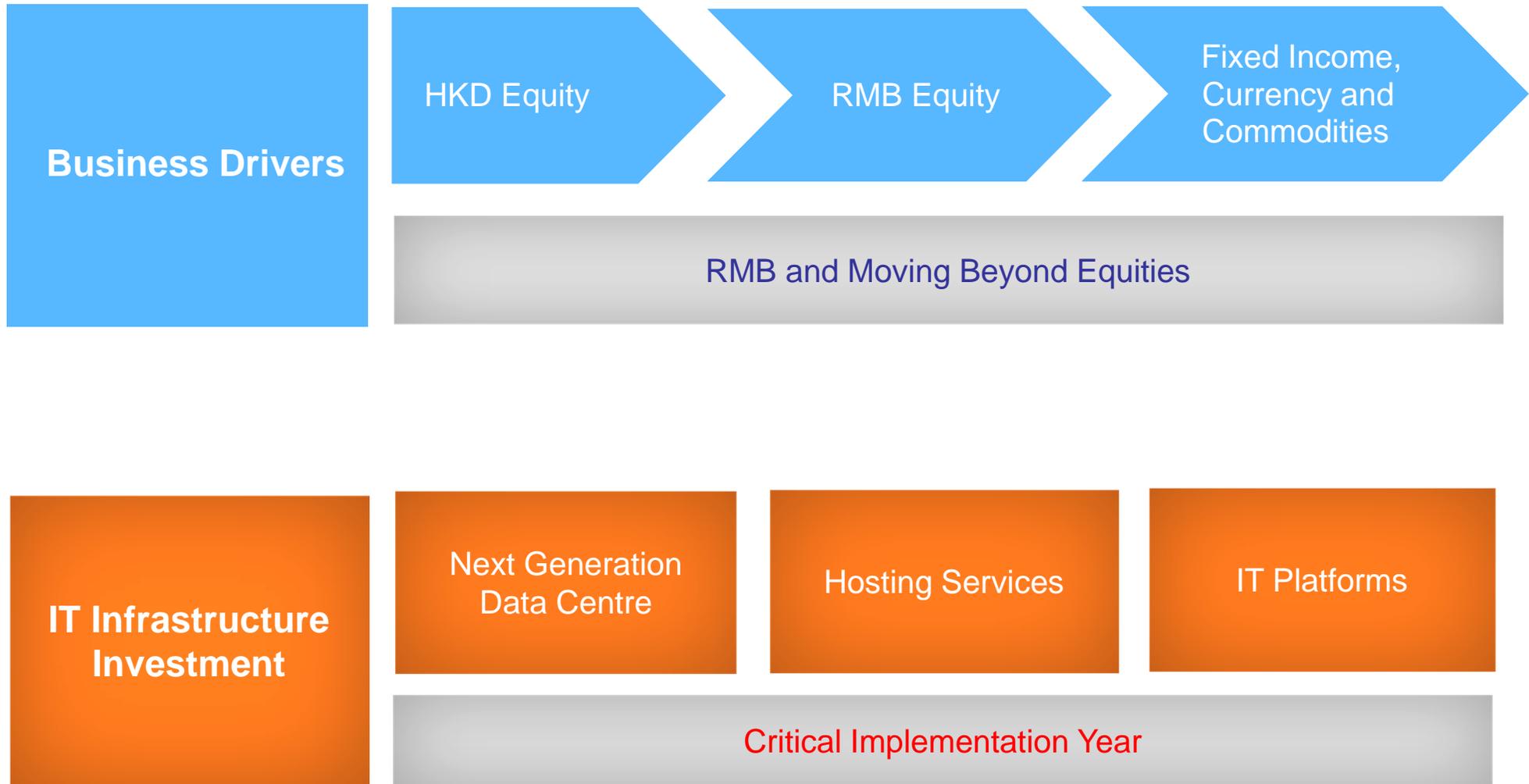


October 2012

Platform Development & Strategy



# 2012 – Key HKEx Strategies



# Leading Hong Kong's Next Transformation

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HKEX  
**Orion**  
TECHNOLOGY INITIATIVES

# Leading Hong Kong's Next Transformation

## Connectedness

Enhancing access & connectivity

## Community

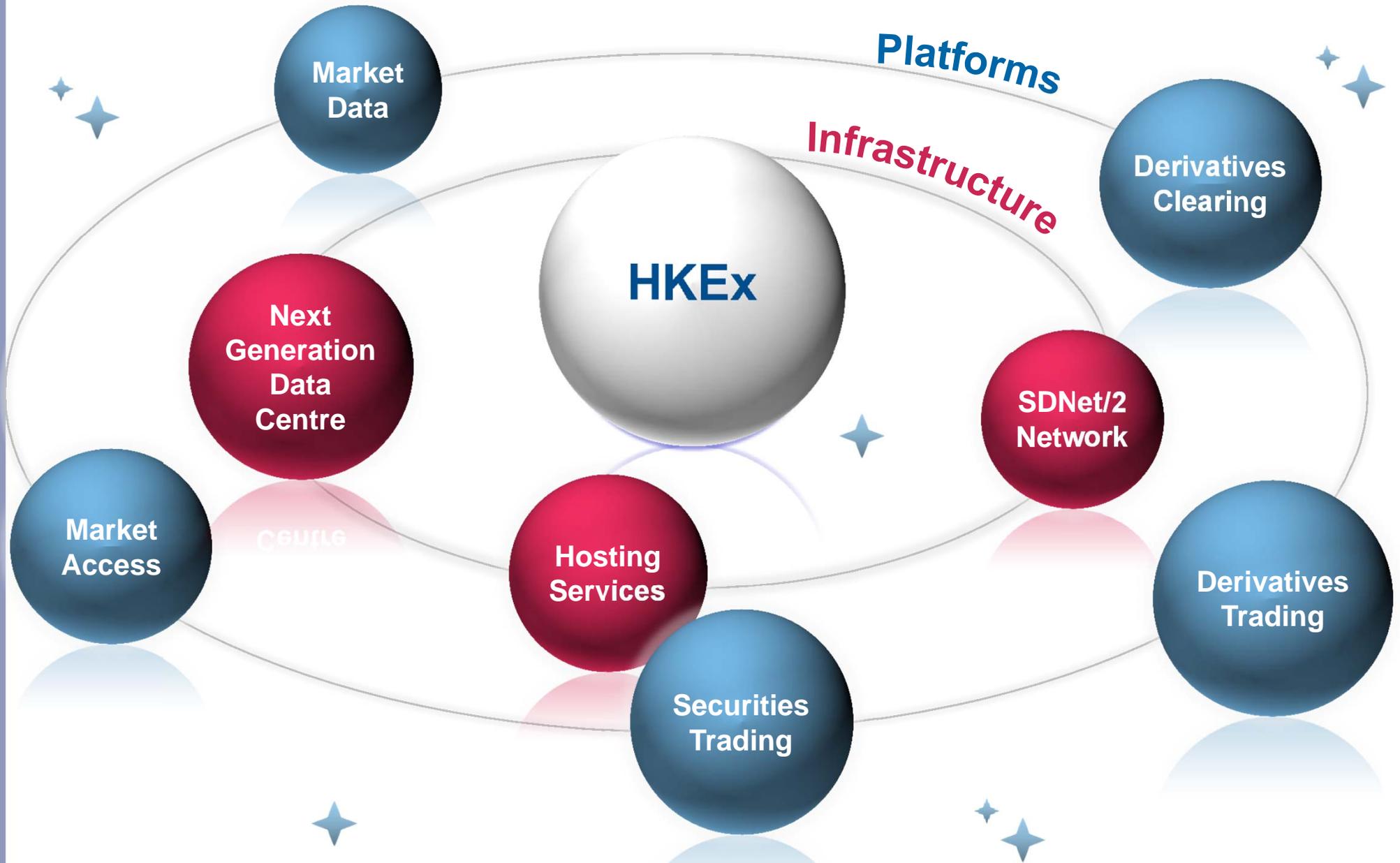
Seizing opportunities together

## Competitiveness

Staying ahead and enhancing competitiveness



# Essential Technology Investment



## Next Generation Data Centre

- ✓ State-of-the-art
- ✓ Consolidation of legacy HKEx data centres

## Hosting Services

- ✓ Low latency access to HKEx platforms
- ✓ Tier-4 standard hosted ecosystem

## SDNet/2 Network

- ✓ Higher bandwidth
- ✓ Competitive pricing

# Platforms

## Market Data

- ✓ Suite of market data products
- ✓ Remote distribution (e.g. Mainland)

## Market Access

- ✓ Cost reduction
- ✓ Additional functionality

## Securities Trading

- ✓ Enhancements and revision of legacy functionality
- ✓ Lower latency and higher capacity

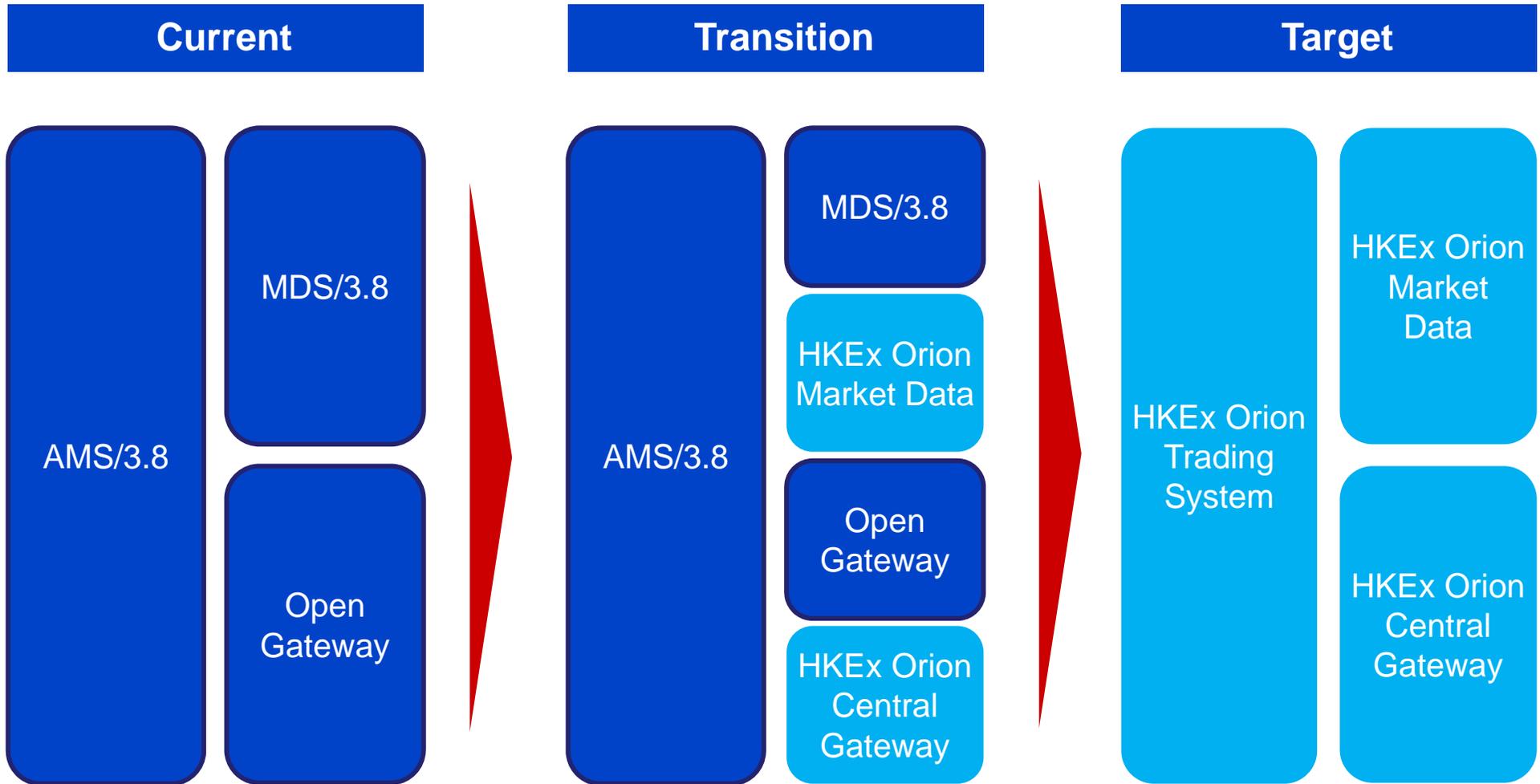
## Derivatives Trading

- ✓ Increased capacity to support options market expansion
- ✓ Industry leading low latency trading platform

## Derivatives Clearing

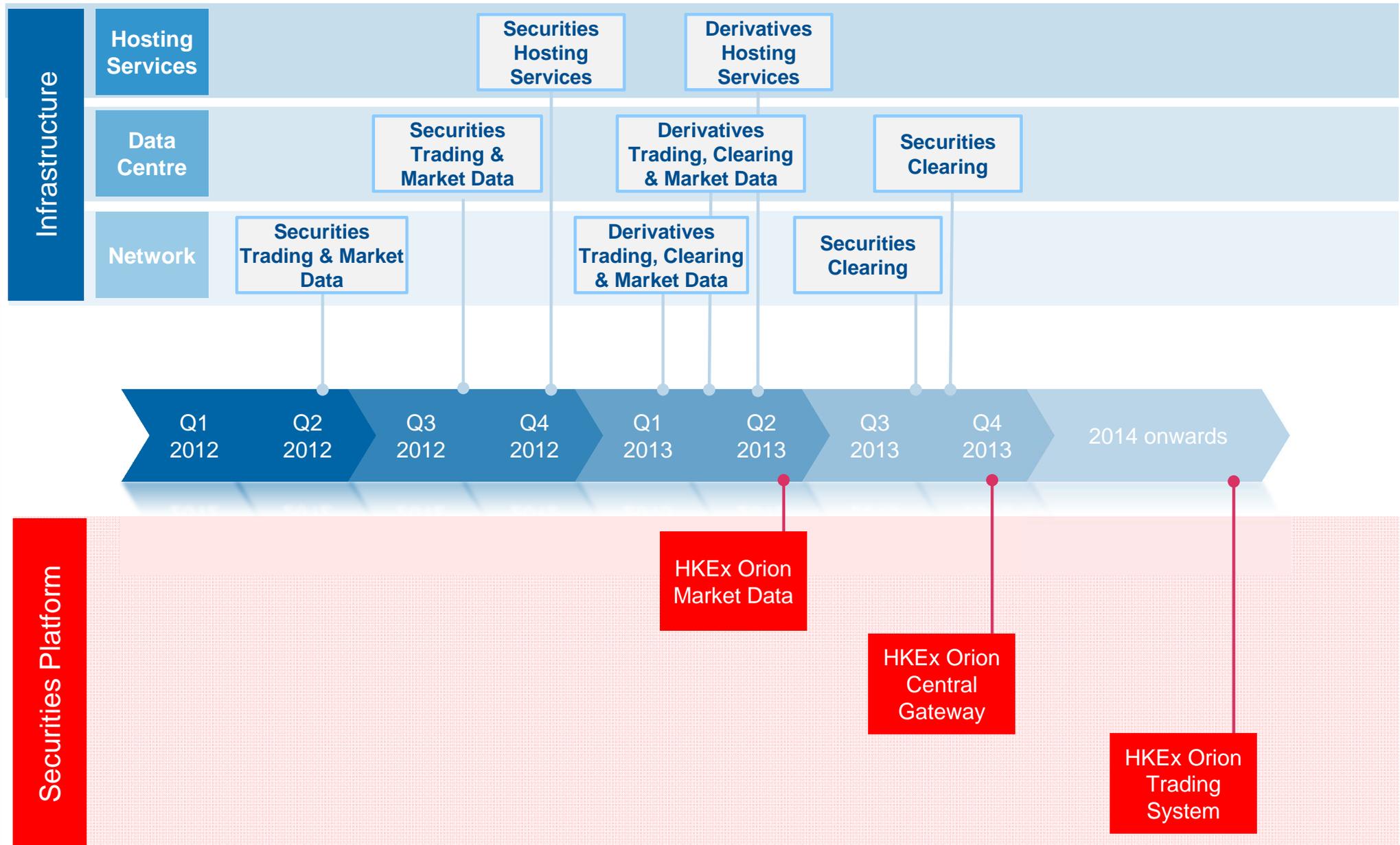
- ✓ Increased performance and throughput capacity
- ✓ Faster response time to daily operational processing

# Securities Market Platform Migration



**Minimizing participant impact**

# Implementation Schedule





# 領航星中央交易網關

## Orion Central Gateway

October 2012  
Securities Market, Trading Division



# Agenda



1

**Introduction**

2

**Orion Central Gateway Features**

3

**Market Access Fee Structure**

4

**Tentative Implementation Schedule**

# Introduction



- Orion Central Gateway (OCG) is part of the HKEx Orion Programme
- For connection between Broker Supplied System (BSS) and HKEx Trading system (AMS/3.8 and future Orion Trading)
- Not for AMS terminals and Multi-Workstation Systems (MWS)
- Standard interface protocol for ease of transition to the future Orion Trading System
- Options for Exchange Participants (EP) to replace expiring Open Gateway (OG) devices and phase migration of OG
- OCG supports multiple connections from EP via “OCG Session” (~ virtual OG)
- Types of OCG Session: Trading, Market Making, and Backup

# Agenda



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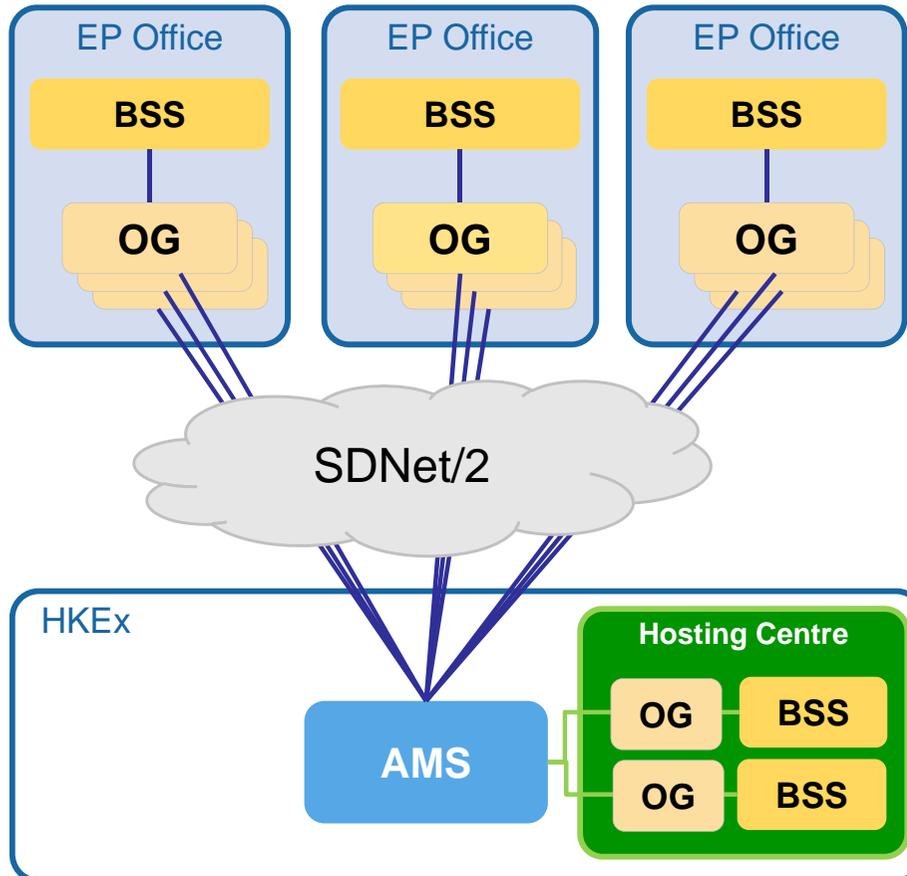
**2 Orion Central Gateway Features**

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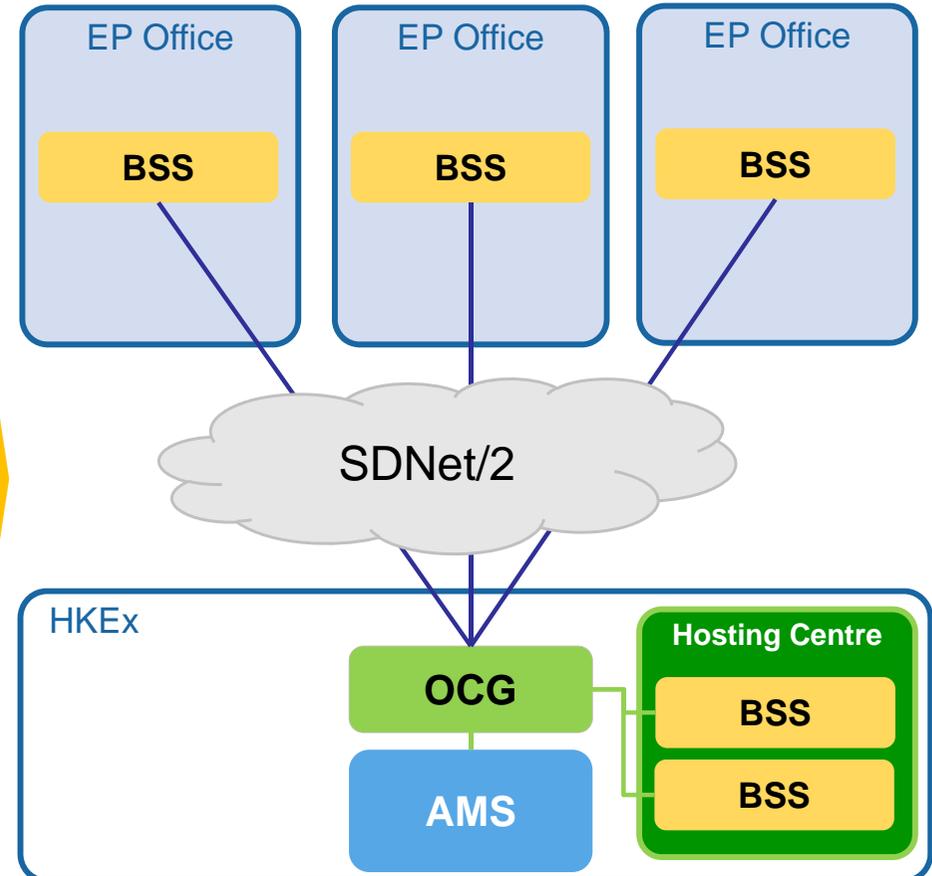
# Gateway Architecture

## Today's Open Gateway (OG) Architecture



- Access via OG Connection
- Gateway device in EP office, maintained by EP
- One pair of SDNet/2 circuits **per OG**

## Future Orion Central Gateway (OCG) Architecture



- Access via "OCG Session"
- Gateway device in HKEx, maintained by HKEx
- One pair of SDNet/2 circuits **per location**

# Comparison of OG and OCG



Key Feature	OG	OCG
<b>Hardware</b>	By EP	By HKEx
<b>Resilience</b>	High Availability (HA) requires HA OG Disaster Recovery (DR) requires Backup OG	HA and DR resilience built in
<b>Interface</b>	AMS/3 open message protocol	FIX or Binary protocol
<b>Capacity</b>	Max 60 Throttles (Trading) Max 30 Throttles (Market Making)	Max 250 Throttles per OCG Session
<b>SDNet Circuit</b>	Separate circuit for each OG	Circuits consolidation for each location
<b>Market Data</b>	Via OG	Via Orion Market Data Platform(Q2 2013)
<b>Trade Data</b>	Central Trade Feed (CTF)	Drop Copy Service*

\* Real-time consolidated trade-only / order and trade reporting

# OCG Benefits to EP

## Cost Savings

- Eliminate OG hardware
- Support SDNet circuit consolidation
- Eliminate monthly Backup Throttle charges

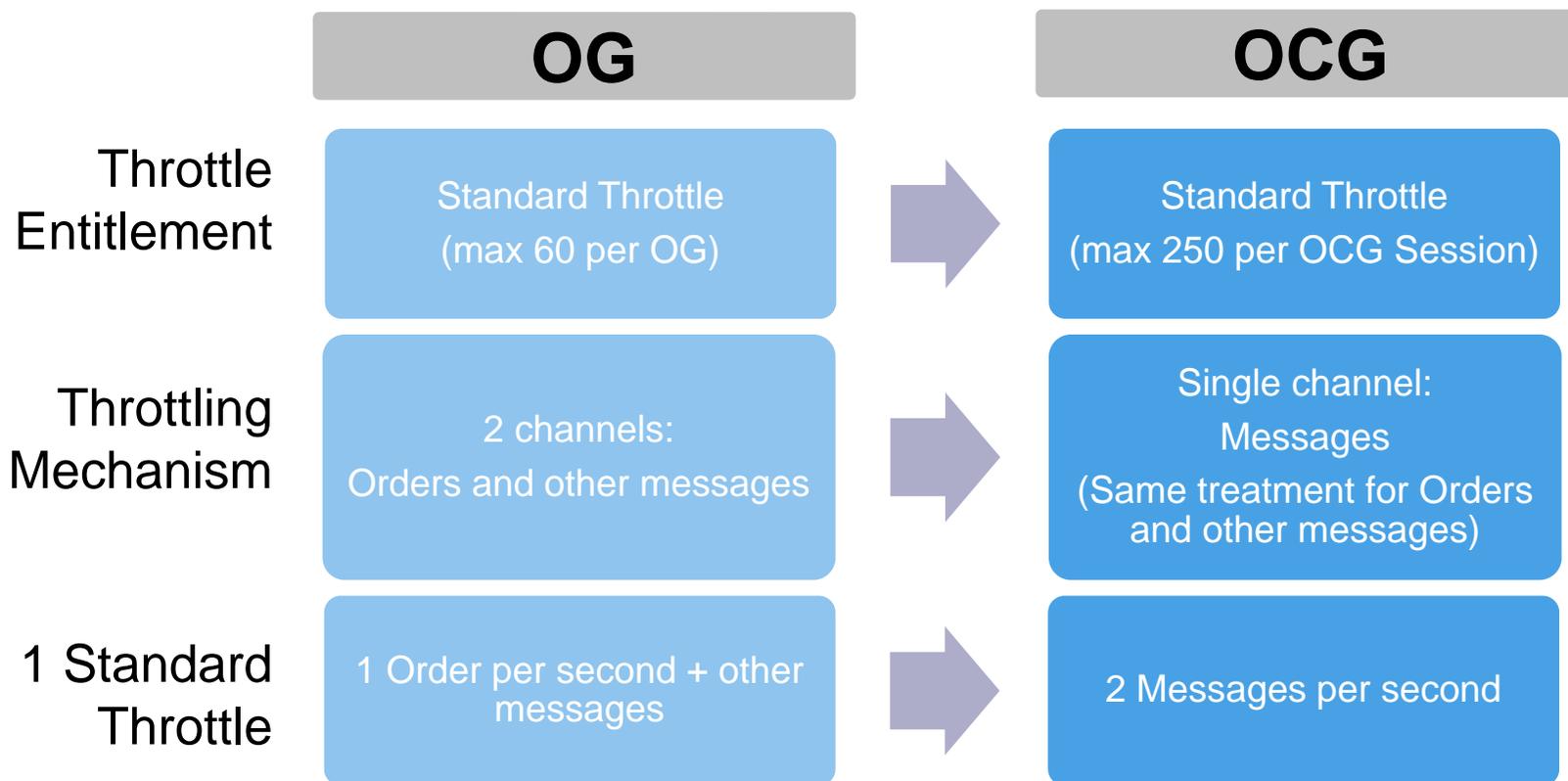
## New Functionality

- Support FIX and Binary protocol compatible with future Orion Trading System
- Introduce Drop Copy service
- Introduce Cancel on Disconnect

## Reliability & Efficiency

- Provide HA and DR to all OCG users
- Faster onboarding time for new OCG Session
- Low latency
- Decouple Trading and Market Data to reduce duplication and bandwidth
- High Capacity Session supports throttle consolidation for better utilization
- One Standard Throttle permits 2 Messages per second

# Change in Throttling Mechanism



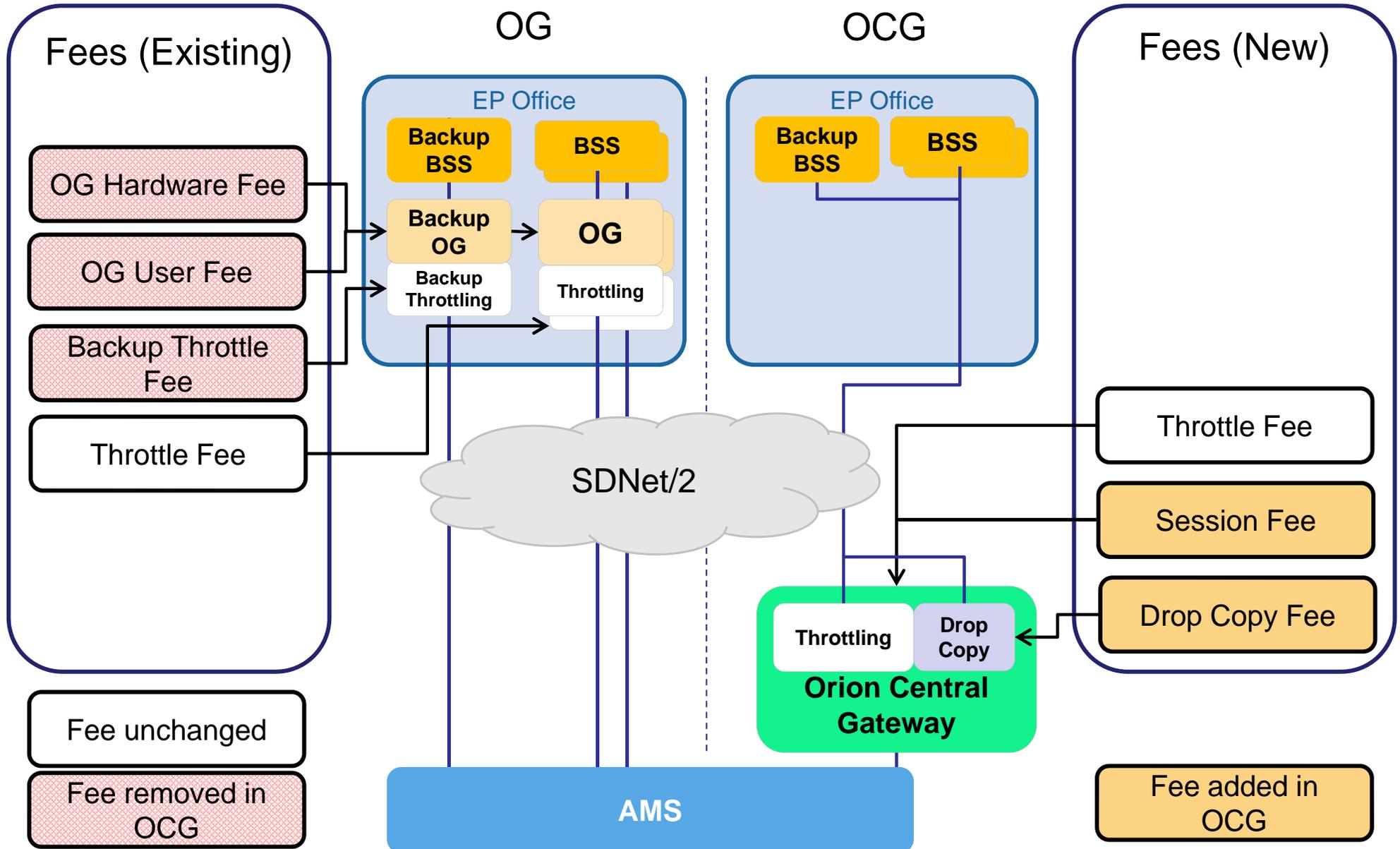
- ***Simplified throttling mechanism***
- ***Additional Order throughput (up to 2 Orders/second per throttle) and flexibility for EPs***

# Agenda



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- 3 Market Access Fee Structure**
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# Market Access Fee Structure



# EP Market Access Cost Comparison



	Standard OG Monthly Cost	HA OG Monthly Cost	OCG Monthly Cost
<b>SDNet/2 circuit (10M)</b>	~\$7,000 per OG		~\$7,000 per location
<b>OG Hardware*</b> (amortized to 36 months)	\$1,000	\$3,640	-
<b>OG Maintenance</b>	\$230	\$520	-
<b>OG User Fee</b>	\$1,250		-
<b>OCG Session Fee</b>	-		<b>3 Tiered Fees</b>
<b>Throttle Fee</b>	\$480/960 per throttle		Unchanged
<b>Backup Throttle Fee</b>	\$480 per throttle		-
<b>Total</b>	<b>\$9,480 per OG + Throttle Fee</b>	<b>\$12,410 per OG + Throttle Fee</b>	

\* Standard OG at \$35,700 and HA OG at \$130,900 each

*This comparison excludes the hosting costs associated with OG as well as the human costs required on OG maintenance.*

# Proposed OCG Fee Structure

(subject to SFC approval)



Monthly		
<b>OCG Session</b> <ul style="list-style-type: none"> <li>• Trading</li> <li>• Market Making</li> <li>• Backup</li> </ul>	Lite	1 to 20 throttles (1 <sup>st</sup> Trading and 1 <sup>st</sup> Trading Backup session discount for each EP)
	Standard	21 to 60 throttles
	High Capacity <sup>[1][2]</sup>	61 to 250 throttles
<b>Drop Copy Session</b> <ul style="list-style-type: none"> <li>• Trades only</li> <li>• Orders and Trades</li> <li>• Backup</li> </ul>		Same session fee (1 <sup>st</sup> Trades only Drop Copy Session and its backup for each EP is free)
One-time		
<b>New Session admin fee</b>		Not applicable for migration of OG

[1] Consolidation of multiple existing OGs

[2] Multiple fee schedule will be applied

# OG to OCG Migration Scenario

(Proposed session fee subject to SFC approval)



Migration Scenario		OG Payment		Equivalent OCG Payment			Indicative OCG Session Tier
OG → OCG		Current Total*		SDNet Fee to Telco	Balance		
1 <sup>st</sup> Standard OG	1 OCG Session (1-20 throttles)	\$9,480	=	\$7,000	+	\$2,480	1 <sup>st</sup> Lite Session (\$2,000)
Additional Standard OG	1 OCG Session (1-20 throttles)	\$9,480	=	\$0**	+	\$9,480	Additional Lite Session (\$7,500)
2 Standard OGs	1 OCG Session (21-60 throttles)	\$18,960	=	\$7,000**	+	\$11,960	Standard Session (\$10,000)
3 Standard OGs	1 OCG Session (61-100 throttles)	\$28,440	=	\$9,000**	+	\$19,440	High Capacity Session (\$15,000)

\* HA OG has an additional \$2,930 monthly payment

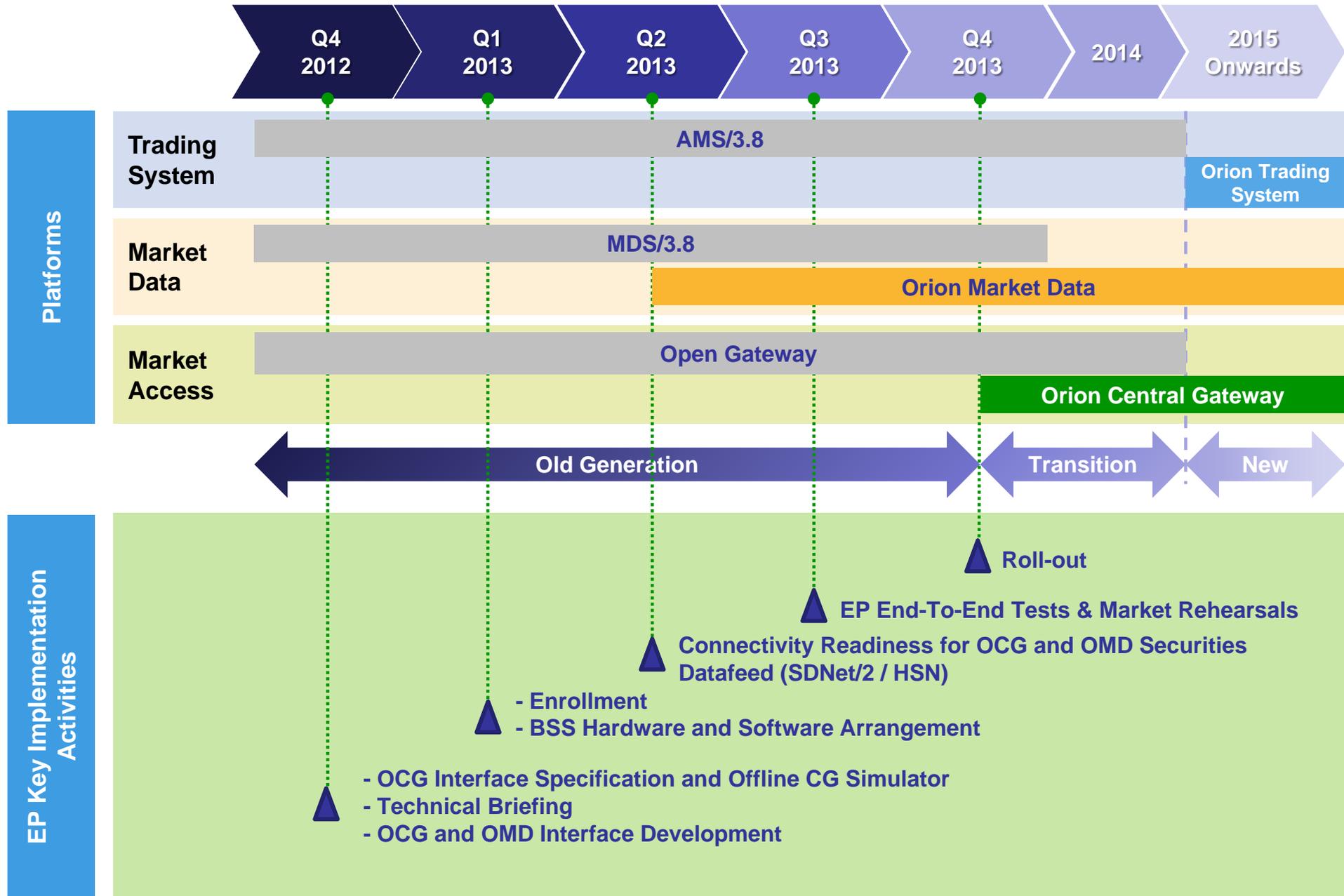
\*\* Fee with consolidation of SDNet/2 circuits, assume High Capacity Session require higher bandwidth SDNet/2

# Agenda



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- 4 Tentative Implementation Schedule**

# Tentative Implementation Schedule



# Enquiries



## HKEx Orion Central Gateway

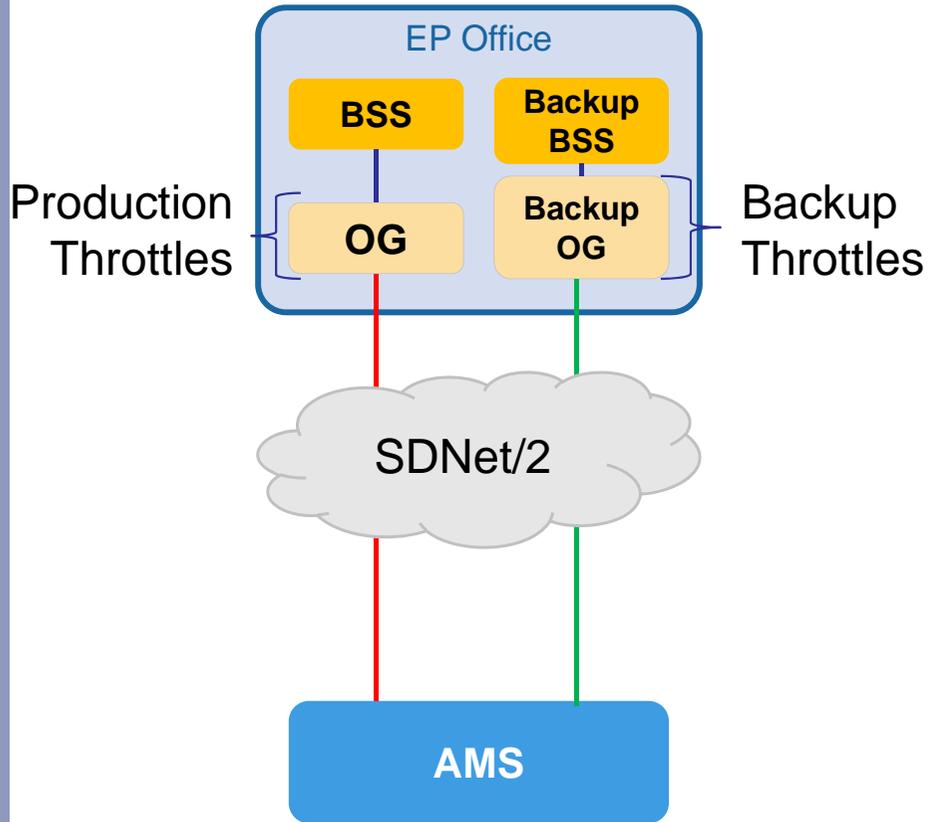
Email: [OrionCentralGateway@hkex.com.hk](mailto:OrionCentralGateway@hkex.com.hk)

Web Corner: <http://www.hkex.com.hk/ocg>

# Appendix

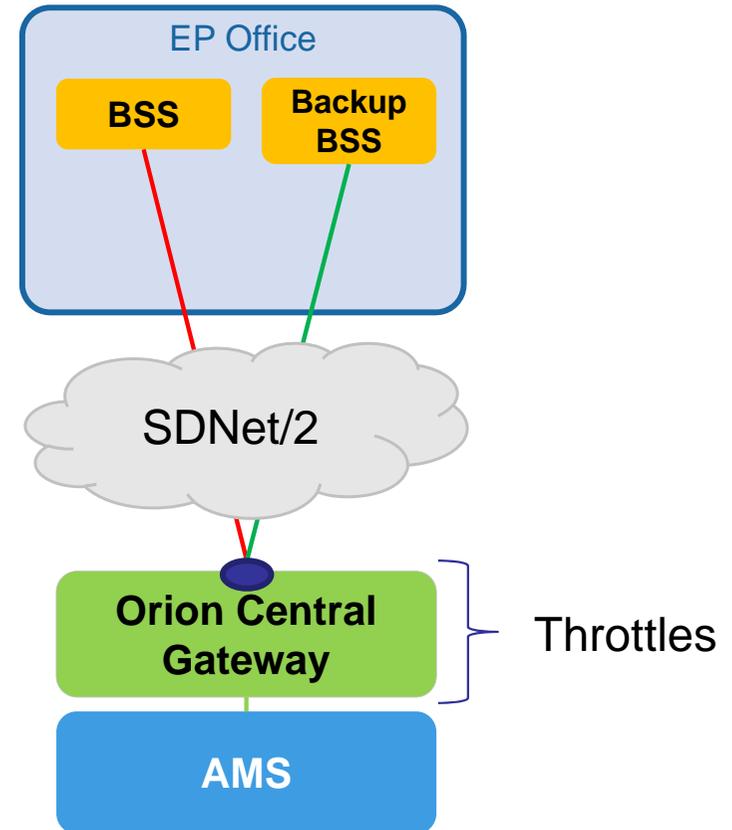
# Backup Arrangements

Today's OG Architecture



- EP responsible for backup of 3 components: BSS, OG and SDNet lines
- Backup requires separate Backup OG device and SDNet line
- Backup Throttles separately assigned to Backup OG (With Backup Throttles fee)

Future OCG Architecture



- EP responsible for backup of 2 components: BSS and SDNet lines
- Production and Backup BSS can access OCG via same or separate SDNet lines
- Same Throttle rate apply to both Production and Backup OCG Session (No Backup Throttles fee)

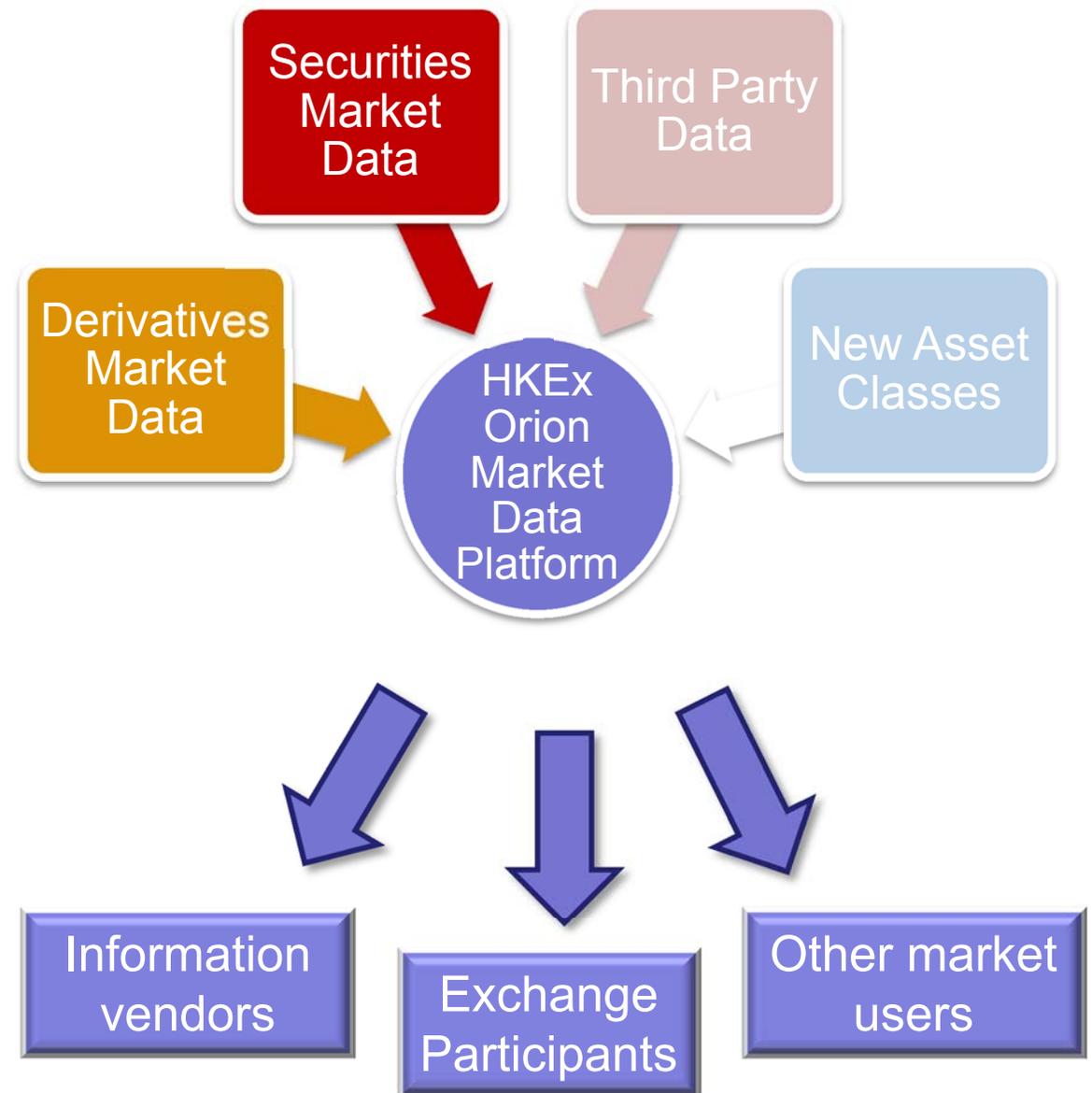
# HKEx Orion Market Data Platform

October 2012

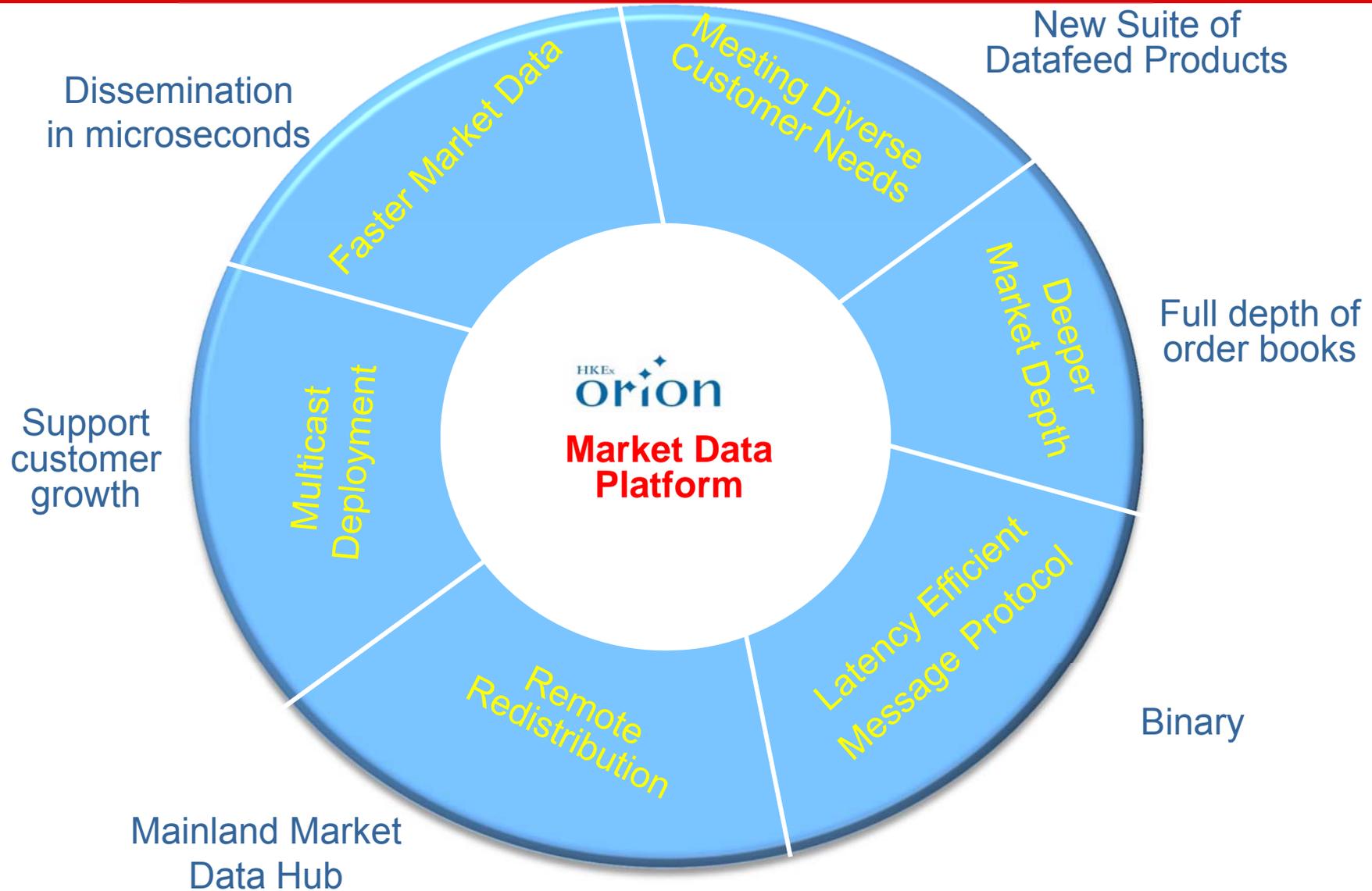


## HKEx Orion Market Data Platform

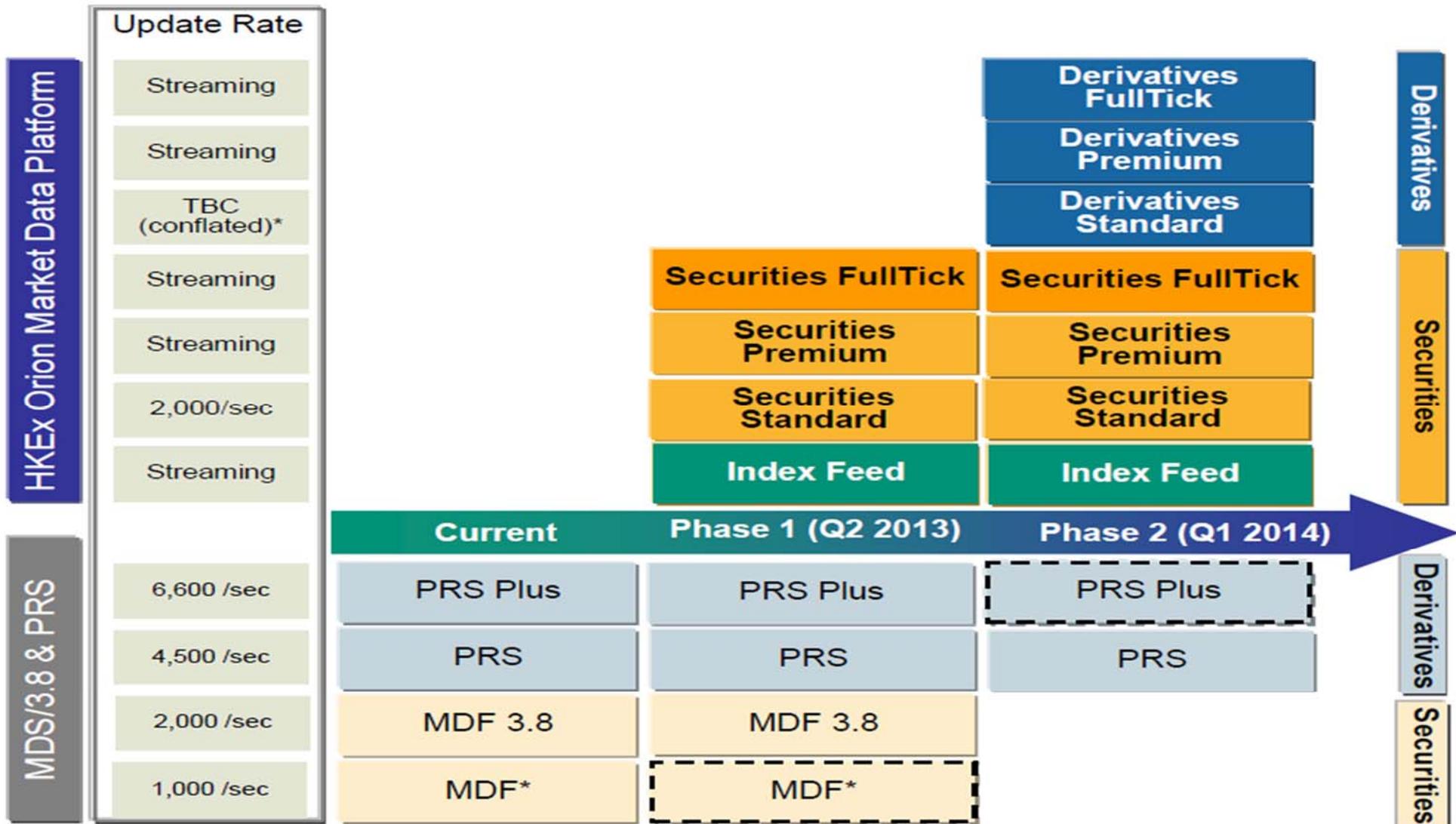
- Single, integrated platform
- Low-latency
- Multiple feeds
- Multiple asset classes
- Common message protocol



## OMD Key Features



# OMD Datafeed Product Road Map



## Securities Market & Index Datafeed Products

Datafeed Product		Update Rate	Content	Bandwidth Recommended
1.	<b>Securities Standard</b> (“SS”)	2,000 messages per second	10 levels of Market Depth All trade tickers (HH:MM:SS) Broker queues IEP/IEV Closing Price Statistics Market Turnover Exchange News Free Text	10Mbps
2.	<b>Securities Premium</b> (“SP”)	Streaming	10 levels of Market Depth All trades (HH:MM:SS) IEP/IEV Statistics Closing Price No. of Trades (day end) Market Turnover Exchange News Free Text VWAP	30Mbps
3.	<b>Securities FullTick</b> (“SF”)	Streaming	Individual order information (price, quantity & type of each order) All trades (HH:MM:SS) <i>Remarks: NO order information during auction session, but IEP &amp; IEV</i>	30Mbps
4.	<b>Index Feed</b>	Streaming subject to the source	S&P/HKEx indices and selected indexes from CSIC and HSIL	1Mbps

**Complimentary Service Feeds to follow.....**

## Securities Market & Index Datafeed Products (Cont.)

Datafeed Product	Update Rate	Content	Bandwidth Recommended
<b>Complimentary Service Feeds</b>			
<b>1. Conflated Broker Queue (“CBQ”)**</b>  <i>- Complimentary to SP and SF</i>	2,000 messages per second	Broker queues	Total 40Mbps (if combined with SP)  Total 30Mbps (if combined with SF)
<b>2. Odd Lot Order (“OLO”)</b>  <i>- Complimentary to SS, SP and SF</i>	Streaming	Odd lot market by order information	Minimal (~100Kbps, can be absorbed by the bandwidths of SS, SP and SF)

**\*\* Important Messages for carrying CBQ with SP:**

- Service level between conflated feed and streaming feed is different.
- Not encouraged to provide the conflated broker queue along with the streaming market depth due to the possible synchronization issue.
- Disclaimer to highlight the service level is a **MUST**.

## OMD Market Data Products Subscription

- Need to sign Market Data End-User License Agreement (“End-User Agreement”) with HKEx Information Services Limited (“HKEx-IS”) for direct connection with OMD.
- Sample End-User Agreement is available at [Data Products Section](#) at HKEx Website.
- Limited number of OMD SS connections with Waiver on End-User License Fees and Connection Fees to be considered and announced with OCG Fees Announcement.

## OMD Enquiry Contact

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### Project Information :

Project Corner at HKEx Website : [www.hkex.com.hk/MarketData](http://www.hkex.com.hk/MarketData)

### Enquiry:

Enquiry Email : [OrionMarketData@hkex.com.hk](mailto:OrionMarketData@hkex.com.hk)