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Amendment #1 to Statement of Work #57  
Royal Bank of Canada

RBC Contract No: CTR021732

AMENDMENT #1 TO STATEMENT OF WORK #57  
Emerald MVP

This *Amendment #1 to Statement of Work #57: Hosting and Dedicated Team ("SOW")* (RBC Contract No: CTR021732) is entered into as of March 4, 2023 by and between Royal Bank of Canada ("Client" or "RBC") and Markit Digital North America Inc. (successor in title and rights to Markit Digital On Demand, Inc.) ("Markit Digital"). Client and Markit Digital are parties to the SOW (RBC Contract No: CTR021732), effective December 1, 2022. Except as provided herein, all other terms of the SOW shall remain unchanged.

This amendment is for the addition of two new instances of a Monthly Service Fee for a defined period (items F, G), a one-time fee (item H), and the increase to an existing, recurring Monthly Service Fee (amended item A) . These fees are to support the design, development and maintenance and support of the Emerald MVP, the scope for which is outlined in the Appendix.

Accordingly, the parties agree that the following language shall be amended:

In section 6, the following items are added:

- F. \$315,000 USD/month for the Integration Team of seventeen and a half (17.5) FTEs for the period starting March 4, 2023 and ending August 3, 2023. This is to support Emerald MVP phase 1, targeting an August 4, 2023 delivery to the acceptance environment.

Client may elect to increase or decrease the number of resources on the Integration Team by providing Markit Digital 60 days' written notice; email shall suffice for this purpose. Should RBC wish to increase the number of Integration Team resources, the fee for incremental Integration Team members above the original number of FTEs per Section 6 shall be \$18,000 per FTE per month, regardless of the number of FTEs. Should RBC wish to decrease the number of Integration Team resources, the savings shall be \$18,000 per FTE per month.

- G. \$180,000 USD/month for the Deployment Team of ten (10) FTEs for the period of three (3) months from August 4, 2023 to November 3, 2023. This is to support Emerald MVP phase 2, targeting a November 3, 2023 delivery to the acceptance environment.

Client may elect to increase or decrease the number of resources on the Deployment Team by providing Markit Digital 60 days' written notice; email shall suffice for this purpose. Should RBC wish to increase the number of Deployment Team resources, the fee for incremental Deployment Team members above the original number of FTEs per Section 6 shall be \$18,000 per FTE per month, regardless of the number of FTEs. Should RBC wish to decrease the number of Deployment Team resources, the savings shall be \$18,000 per FTE per month.

- H. A one-time fee of \$215,000 USD payable on or before December 31, 2023. This a negotiated amount to offset the reduction in additional monthly fees for Hosting Services from \$28,000 USD per month to \$15,000 USD per month upon the Acceptance Date of Emerald MVP phase 1 (as per item A) through the end of the current term.

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In section 6, the verbiage in item A shall reflect an increase in monthly hosting Fees from \$44,476 to \$59,476 effective on Acceptance Date of Emerald MVP phase 1. Accordingly, the verbiage in item A of section 6 shall be removed and replaced with the following:

- A. The monthly Hosting Services (as described below and in Section 10) for all RBC DI Services and RBC projects launched during the term of this SOW #57 shall be:

- I. \$ 44,476 USD per month from the Effective Date through the day preceding the Acceptance Date of Emerald MVP phase 1;
- II. \$ 59,476 USD per month from Acceptance Date of Emerald MVP phase 1 and thereafter

Commencing on the Launch Date (defined as when the Emerald MVP phase 1 is moved to an integrated acceptance environment or as otherwise agreed by the parties in writing, RBC shall conduct testing on the RBC DI Services within five (5) business days (the "Acceptance Period"). Within the Acceptance Period, RBC shall provide written notice of acceptance or rejection. In the event RBC rejects any part of the RBC DI Services, RBC shall provide adequate explanation regarding the material defects. If RBC fails to provide written notice of rejection within the Acceptance Period, Markit Digital may deem the RBC DI Services accepted. The date upon which the RBC accepts the RBC DI Services, or the RBC DI Services has been deemed accepted, shall be referred to as the "Acceptance Date."

Notwithstanding the remainder of this section, RBC's right to accept the RBC DI Services is applicable solely to completion of listed project milestones and overall completion of development services. Hosting Services are not subject to RBC's acceptance. RBC agrees that the usage of hosting services by RBC constitutes acceptance of the hosting services.

Hosting Services include:

- Hosting in redundant data centers
- 24/7/365 support through Markit Digital's Tier 1 Support Center formerly known as Network Operations Center and located in Boulder, Colorado
- Ongoing data feed support and management for proprietary Client and third-party sources
- Access to proprietary systems, including Markit Digital's proprietary symbol cross-reference system
- Security

The Monthly Service Fee includes up to 20 million (20,000,000) page views or direct API requests per week. Should Client traffic exceed 20,000,000 page views or direct API requests per week, the parties shall mutually agree on a revised fee structure to account for increased traffic.

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The parties cause this amendment to be executed by their duly authorized representatives on the dates specified below.

<b>ACCEPTED</b> MARKIT DIGITAL NORTH AMERICA, INC.	<b>ACCEPTED</b> ROYAL BANK OF CANADA
<b>SIGNATURE</b>  E-SIGNED by Renee Spampinato on 2023-06-20 15:02:23 GMT	<b>SIGNATURE</b>
<b>PRINT NAME</b>  Renee Spampinato	<b>PRINT NAME</b>  Dimitri Busevs
<b>TITLE</b>  Markit Digital- Global Head	<b>TITLE</b>  Vice President and Head of RBC Direct Investing
	<b>ACCEPTED</b> ROYAL BANK OF CANADA
	<b>SIGNATURE</b>  E-SIGNED by Flora Do on 2023-06-20 14:50:30 GMT
	<b>PRINT NAME</b>  Flora Do
	<b>TITLE</b>  VP, Investments Transformation & Client Segments

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APPENDIX – Summary of Emerald MVP requirements

This project is to support a migration of users from HSBC Canada users of the HSBC InvestDirect platform onto RBC's Direct Investing (DI) platform on Aug 4, 2023. These new users will be migrated to the "Emerald" digital product, which shall enable the internationalization of DI.

Emerald users will constitute a new user tier on an instance of the current DI experience and technology with an expanded investing universe including instruments from the Stock Market of Hong Kong (HKEX), London Stock Exchange (LSE), Frankfurt Stock Exchange (FRA) and Euronext Paris Stock Exchange (EPA) and supporting quote and research experiences for stocks, ETFs and indices that aim to emulate current DI to the extent in scope below. The Emerald and current-DI products are intended to fully merge together at a point in time to be determined by RBC, thus RBC seeks to apply to Emerald a replication of existing DI architecture f to the extent possible.

The Emerald MVP is defined as items listed IN SCOPE for phases 1 and 2 as follows:

- Phase 1 – Deliverable targeting August 4, 2023 and supported by an Integration Team of 17.5 FTEs
  - Expand the existing symbol universe to include instruments from HKEX (The Stock Exchange of Hong Kong)
  - Integrate real-time and delayed market data from HKEX instruments
  - Map HKEX data into existing Detailed Quote templates
  - Integrate HKEX fee-liable quotes into the quote counting deliverables, including from the FactSet Trading Dashboard
  - Support two symbol universes throughout the platform, one for DI and one for Emerald
  - Translate DQ pages to French with translations provided by RBC
  - Support the addition of HKEX instruments to existing RBC tools including the following: Holdings drawer, Watchlist, Alerts, and Universal Search
  - Upgrade of existing APIs to include above changes for RBC's consumption
  - The below items are in scope based on the assumption that the data from HKEX map very similarly to the data underlying these experiences currently on DI
    - Markets Overview page including: Sectors vs. Benchmark for HKEX instruments;
    - Market Events; Market Movers
    - Asset Mix view of the Holdings page
    - Portfolio Analyzer
- Phase 2 – Deliverable targeting November 4, 2023 and supported by an Deployment Team of 10 FTEs
  - Maintenance, testing and fast-follows for items within the scope of MVP phase 1 as per above
  - Addition of LSE, FRA, EPA exchanges corresponding to HKEX within the scope of the Integration Team as per above

UNDER CONSIDERATION (inclusion depends on complexity of final designs and requirements)

- Various additional views of the Holdings page including Portfolio News and Portfolio Quotes
- Screeners (Stock, ETF, and Mutual Fund)
- MIND Events
- Technical Analysis page and modules

OUT OF SCOPE

- Migrate existing HKEX, LSE, FRA, EPA alerts to RBC's alerting platform
- Migrate existing HKEX, LSE, FRA, EPA watchlist data to RBC's watchlist platform
- Integration of HKEX, LSE, FRA, EPA Options securities
- Integrate and display data for additional international markets
- Integrate and display commodities data from additional markets
- Integrate and display treasury data from additional markets
- Support Trading Central alert types that exist in HSBC
- Migrate and support existing book cost calculations that exist in HSBC platform
- Quotes and fundamental, market and corporate data to support securities traded on select international exchanges: LSE, Euronext and Frankfurt

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- Translate DQ pages to Traditional Chinese with translations provided by RBC (itemized quote and effort)
- LSE, FRA, EPA data integration to legacy pages
- Market Snapshot page and modules
- Technicals for LSE, FRA, EPA securities from Trading Central, including changes to Technicals tab on Detailed Quote pages
- Sectors and Industries page and modules
- Market Commentary page and modules
- News & Headlines page and modules
- Earnings & Events Calendar page and modules

ASSUMPTIONS

- For August 4, 2023, the target is to have the solutions deployed into the acceptance environment with the Emerald MVP that includes integration of HKEX experiences and excludes integration of experiences for LSE, FRA, EPA
- RBC has the data licenses in place at the start of the project. Any delays in data licensing may shift the delivery date.
- Existing page templates will undergo minimal changes to accommodate the new universe of HKEX, LSE, FRA, EPA data. Significant changes, such as those that would require a significant re-design, are out of scope.
- No substantial re-design of pages is required.
- Any HKEX, LSE, FRA, EPA data that requires substantial effort to translate into the platform's existing data structures may result in a shift of the delivery date or may need to be removed from scope
- Security types that are not currently supported by the existing RBC DI platform will be out of scope
- No new data feeds need to be integrated by Markit Digital
- Similar to HKEX, fundamentals data for LSE, FRA, EPA, where applicable, would be provided by Refinitiv
- Similar to HKEX, reports for LSE, FRA, EPA, where applicable, would be provided by Morningstar
- All data provided by the data providers map into existing data structures and does not require substantial re-mapping
- Symbol universe logic being implemented as part of HKEX can be re-used

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