Contract ID No. CW2630787

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SCHEDULE NO. 2
TO
MASTER AGREEMENT CW280805

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This Schedule No. 2 ("Schedule"), effective on the date of last signature of this Schedule ("Effective Date") is an agreement between JPMorgan Chase Bank, National Association ("JPMC") and Markit On Demand, Inc. fka Wall Street On Demand ("Supplier" or "Markit") and incorporates, by reference, all terms and conditions contained in the Master Agreement CW280805, dated 6th February 2009 as amended from time to time ("Agreement"). Except as otherwise expressly set forth in this Schedule, the defined terms used in this Schedule shall have the same meanings as the defined terms in the Agreement. In the event of a conflict or ambiguity between the terms and conditions of the Agreement and this Schedule, the terms and conditions of the Agreement shall prevail.

1.   Incorporation of Agreement

This Schedule is a separate agreement between Supplier and JPMC and incorporates the terms and conditions of the Agreement CW280805 as amended from time to time between JPMorgan Chase Bank, N.A. and Supplier, dated April 2, 2009. Capitalized terms used but not defined in this Schedule will have the meanings given to them in the Agreement. If a term in this Schedule conflicts with a term in the Agreement, the provisions of the Agreement will prevail unless this Schedule specifically states that the term in the Schedule will prevail. References in this Schedule to Sections and Exhibits will refer to the Sections and Exhibits of this Schedule unless otherwise noted.

2.   Schedule Term.

The term of this Schedule will begin on the Effective Date and continue until 31st December 2020, unless earlier terminated in accordance with the terms of the Agreement ("Initial Schedule Term").

Upon the expiration of the Initial Schedule Term, and JPMC's request, this Schedule will renew for successive 12 month periods (each a "**Renewal Schedule Term**") unless terminated earlier in accordance with Section 13 Term and Termination of the Agreement. 90 days prior to the expiration of the Initial Schedule Term and any Renewal Schedule Term, Supplier will notify JPMC of the pending term renewal. JPMC will have the right to renew the term of this Schedule by providing Supplier with not less than 30 days' prior notice of its intention to renew. The Initial Schedule Term together with the Renewal Schedule Term(s) shall be referred to as "**Schedule Term**."

Notwithstanding the above, JPMC shall have the right to Terminate this Schedule for convenience, in whole or in part, at any time upon 30 days written notice to Supplier for its convenience after the completion of the Initial Schedule Term.

Further notwithstanding anything contained herein, this Schedule shall remain in full force and effect until delivery of any Service by Supplier pursuant to this Schedule including any End of Term Assistance Services.

3.   Scope of Work.

Supplier will develop and support web components and APIs for Chase/J.P. Morgan personal online client portal (CPO/JPO), on both web and mobile platforms, as part of the Digital Wealth Management program.

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For purposes of this Order Schedule, "**Subscriber**" shall mean:

- **JPMC's Internal Users**: Employees or consultants of JPMC or Affiliates of JPMC globally, ("JPMC Affiliates") that (i) support any aspect of the JPMC Portals or (ii) use the JPMC Portals for JPMC's internal use only. For avoidance of doubt, JPMC's Internal Users shall be considered "Professional Users"
- **JPMC's Internal Technical Users**: Technical Employees or consultants of JPMC or JPMC's Affiliates globally, not considered neither "Professional Users" nor "Non Professional Users", that will be differentiated during development period, where applicable and in accordance with applicable JPMC's Policies, and report said usage accordingly. JPMC shall be responsible for (i) correctly categorizing users, and (ii) notifying Supplier of such users, where required
- **JPMC's External Client Users**: JPMC's external client users that will have access to the JPMC Portals set forth below. Most of such JPMC's External Client Users are considered non-professional by definition (considered "Non-Professional Users"), but others may have a job that considers them professional but will be utilizing the Services in a personal, non-work related, non-professional capacity. JPMC shall be responsible for: (i) correctly categorizing and reporting to Supplier whether such JPMC's External Client User(s) are either Professional User(s) or Non-Professional User(s).

The following are the platforms and websites from which the components defined herein will be accessed by the JPMC's Subscribers at the outset of this Schedule. Subject to written agreement between the parties, JPMC may add client portals, websites, URLs, etc. that are related to the JPMC Portals set forth below. Additional Fees as set forth in Fees Exhibit may apply.

- Wealth Management Client Portal (Private Bank, J.P. Morgan Securities)
  - JPO aka J.P. Morgan Personal Online = J.P. Morgan Secure Pages (jpmorgan.chase.com; alias: jpmol.com; jpmorganonline.com; morganonline.com)
  - JPM Mobile = the mobile version of the Wealth Management Client Portal websites
- Retail Bank Client Portal (Chase Retail)
  - CPO aka Chase Personal Online = Chase Retail Secure Pages (chase.com)
  - Chase Mobile = the mobile version of the Retail Bank Client Portal websites
- Chase Business Online (CBO)
  - CBO aka Chase Business Online = Chase Business Secure Pages (chase.com)
  - Same platform, including styling, as Retail Bank Client Portal; CBO is simply branded as a Chase business portal

The above is not intended to be an exhaustive list of websites / client portals alias'/redirects that lead to the websites. JPMC will notify Supplier of any changes to this list when JPMC becomes aware of such changes. There are no restrictions to such changes as long as the aliases/redirects all pertain to the JPMC Portals named above or that are subsequently added during the term as may be agreed by the parties in writing

JPMC acknowledges that the ability of Supplier to perform Services in the timeframe set forth herein is contingent upon JPMC's provision to Supplier of timely information; responses, and/or feedback. Suppliers' time of performance will be increased, day-for-day to match any delay caused by failure by JPMC to submit information; responses, and/or feedback by the dates set forth in this Schedule. For avoidance of doubt, there will be no extra charges assessed to JPMC for any such delay. For Services performed under this Schedule, time of the essence shall not apply.

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4. Description of Services and Deliverables.

    4.1   Development Services. The Supplier shall provide the following Development Services to JPMC:

- Developing and provisioning custom APIs and web content delivery
- Responsive, web-based applications for use in both web and mobile platforms (Android and iOS compatibility); applications will be responsive across desktop, tablet and mobile based on the following responsive grid ranges: 320 Extra-Small, 768 Small, 1024 Medium, 1200 Large
- Implementing JPMC provisioned designs / design guides; Supplier will develop content modules in compliance with JPMC's provided style guide; Supplier will author CSS for each content application
- QA and defect remediation

JPMC and Supplier shall mutually agree upon detailed requirements of the items above and in the Description of Deliverables Exhibit in advance of development.

    4.2   Administrative and Project Management Services. The Supplier shall provide the following Administrative and Project Management Services to JPMC:

- Services to be performed:
  - Project roadmap management in alignment with JPMC scheduled releases; the parties shall mutually agree upon release schedules during the development phase of the Deliverables
  - Weekly checkpoints with JPMC design, architect, developer, and product teams
  - Market data delivery and exchange reporting; Supplier will provide monthly exchange reporting to JPMC and/or the applicable sources
- The manner in which the services will be performed:
  - Supplier will leverage its JIRA for project tracking all work items, change controls, QA testing, and defect logging; JPMC will be provided access.
  - All Supplier Deliverables under this work order will be integration tested and follow the JPMC Digital sanctioned SDLC as a prerequisite to production implementation.
- Completion criteria for the project:
  - Deliverables are delivered, accepted by JPMC in accordance with Section 5 Acceptance below and as detailed in the Description of Services and Deliverables Exhibit and implemented in accordance with JPMC requirements and integration standards defined in the Agreement and this Schedule, and released into production environment(s)

    4.3   Hosting and Support Services. The Supplier shall provide the following Hosting and Support Services to JPMC:

- Standalone environment for Hosting, support and maintenance of the Deliverables
- Network connectivity and authentication
- Encrypted and tokenized data transfer
  - Authentication will be facilitated through both Oauth client credentials grant and JWT extension via browser cookie using TP-PSaaS and API calls from JPMC server side prox. User access token expiry will be set at 10 minutes. The following endpoints and JVM app names will be utilized for iFrame/Web content containers and APIs in both

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Production (Prod) and Pre-Production (QA) environments:
- API Prod: api-markit.chase.com to point to api.markitdigital.com
- API QA: qa-api-markit.chase.com to point qa-api.markitdigital.com
- Web Content Prod: web-markit.chase.com to point to https://jpmc-qr.markitdigital.com
- Web Content QA: qa-web-markit.chase.com to point to https://jpmc-qr.markitqa.com

o Supplier will create Client IDs for the following apps:

App Name	Description	Auth type	Token
WM_Gator	API connectivity for GATOR WM system	Client creds	2 hour expiry
WM_RQSMargin	API connectivity for RQS/Margin WM system	Client creds	2 hour expiry
Digital_MW	API connectivity for Digital Middleware	Client creds	2 hour expiry
Digital_UI	Web components for retail web	JWT	10 minute expiry

- Performance testing
- Dynamic security and penetration testing - ensure that industry standard best practices are in place for all policies and procedures related to data security (encryption, etc). Supplier will conduct annual tests on their own, with 20 business day's notification in advance by JPMC, following OWASP Top 10 guidelines, and send JPMC the results on all hosted components. Supplier will also be subject to periodic scans initiated by JPMC (currently annual, but may change to semi-annual at JPMC's if mutually agreed by JPMC and Supplier). Upon the identification of a security incident by Supplier or JPMC as a result of a security test or otherwise in the normal course of business, and according to the definition in Supplier's incident management policy, Supplier shall remediate the identified incident as per the SLAs identified in Section 10 of the SLA Exhibit.
- Web/data analytics; Supplier shall integrate web analytics tags into components provided to JPMC

4.4 Deliverables. The Supplier shall provide the following Deliverables to JPMC:

Supplier will provide the Deliverables set forth in the Description of Deliverables Exhibit. All Deliverables are deemed Developed Works.

4.5 Enhancements.

JPMC is entitled to an enhancement budget equal to fifteen percent (15%) of the monthly service fee to fund future enhancements to the Deliverables, which may include design changes, addition of new features, or integration of new data (the "Enhancement Budget"). The Enhancement Budget shall be specified in Fees Exhibit and shall be accrued on a monthly basis and the unused amount will be credited to JPMC on the next invoice at the end of each quarter ending February, May, August and November. Supplier will multiply its standard rate of $175 an hour by the number of hours worked on any enhancement and subtract the resulting product from the accrued Enhancement Budget. Supplier will report allocated and available Enhancement Budget to JPMC on a monthly basis. For the avoidance of doubt, JPMC may apply Enhancement Budget toward any of the Deliverables.

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Upon 60 days written request from JPMC, the Supplier will reduce the Enhancement Budget, and ongoing fees defined in Fees Exhibit shall be reduced based on the rate above. Such changes shall be documented in an amendment to this Schedule.

If there are any amounts available in the enhancement budget at the end of the Schedule Term, such amounts will be returned to JPMC.

      4.6   Bug Fixes and Material Changes

Supplier will not charge any additional fees for work done to address any material defects in the Deliverables so it conforms to the original requirements set out in this Schedule and its functional documentation ("Bug Fixes") to the extent that supplier is hosting the Deliverables. Supplier will make any changes beyond Bug Fixes and if applicable, changes covered by the Enhancement Budget, at the rate of $175 an hour. Should JPMC request Supplier to perform additional work, the parties will enter a separate Schedule.

5.   Acceptance

Acceptance Criteria. In addition to being in Compliance and in line with the Criteria set in Section 4 Testing, Correction and Acceptance of the Agreement, the Deliverables must meet the following criteria as a condition of Acceptance:

As per the Description of Deliverables Exhibit.

6.   Service Levels.

The Service Levels are set forth in the Service Level Agreement ("SLA") Exhibit.

7.   Third Party Content

In order to receive third-party IP data as part of the Services, JPMC may be required to obtain a direct license and /or sub-license from the relevant Third Party Licensor(s) in respect of JPMC's use of that Third Party IP. Supplier can recommend and make introductions to appropriate providers, explain use cases for content and answer questions providers may have, but JPMC will be responsible for all agreements with and payments to such providers, unless the relevant provider requires the payment to be done by Supplier. Notwithstanding the foregoing, certain Third Party Licensors shall also require Supplier to have an appropriate license, and Supplier shall comply with the terms of that license in order to receive the third-party IP data hereunder.

Prior to entitling Third Party Licensor's IP data to JPMC, Supplier must receive written consent for JPMC's scope of use from the applicable the Third Party provider before permission is given to the service. It is the responsibility of Supplier to centrally store any associated consent documents for regulatory and audit purposes. Upon request, Supplier shall provide the documented consent from the Third Party Licensors to JPMC.

When the relevant Third Party Licensor requires the payment to be done by Supplier, Supplier will charge JPMC and pass these fees onto the relevant Third Party Licensor. Supplier will pay necessary market data fees directly to each Third Party Licensor and will treat such fees as pass-through charges to JPMC without any mark-up. In the event there are any additional fees for use of Third Party IP delivery in conjunction

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with use of the data, JPMC must be notified in writing by Supplier for the additional fees and must receive consent before any fees apply. Supplier will receive written approval from each Third Party Licensor prior and provide evidence to JPMC before to entitling the content to JPMC.

Upon request by JPMC to Supplier and an amendment to this Schedule, Supplier shall be authorized to act as the agent of JPMC for the purchase of certain data and/or content required by JPMC for this project and is authorized to contract on behalf of JPMC for such purchase. JPMC is responsible for all licensing expenses; any amount of sales, use, excise, gross receipts, value added, goods and services, or other taxes; and any other fees applicable to or arising from the provision or the use of such data and/or content, including any additional fees should Third Party Licensor increase their fees at any time. Supplier will notify JPMC in writing of any fee increases within thirty (30) days of receiving such notice from the applicable source. Subject to the licensing terms with the applicable source, JPMC may elect to remove such content upon written notice to Supplier, and JPMC and Supplier shall mutually agree upon a plan and timeline to remove such content.

Supplier email address for Third Party Content related requests: Data.SolutionsPOC@ihsmarkit.com

8.   Entitlement System Services, Reporting:

- **Entitlement**: In addition and subject to all Third Party Licensors approvals, Supplier will also provide, where applicable, data permissioning for data from Exchanges as well as other third party data providers as may be mutually agreed to by the Parties for specific Subscribers as may be requested by JPMC.

- JPMC will provide Supplier with a unique identifier along with parameters indicating to which Market Data Components (and Data Sources) Subscribers are entitled. JPMC's External Client Users shall have entered into a Client Agreement prior to JPMC's provision to Supplier of such unique identifier.

- **Entitlement Report for Market Data Sources** delivered via XML API based Delivery. On a monthly basis, Supplier shall use commercially reasonable efforts to provide JPMC with an Entitlement report within ten (10) business days of the calendar month end. Such Entitlement report will summarize the quote usage by each Subscriber User.

- **Third Party Supplier Reporting (including Exchanges)**: To the extent permitted by the Third Party Licensors, the Supplier will perform quote counting where applicable for Real-Time Exchanges and provide specific usage reports of such quotes ("**Quote Count Reports**") to each Third Party Licensor. Supplier will be responsible for the accuracy relating to its quote counting and quote consumption reporting mechanisms to each Third Party Licensor, and, to the extent its quote counting and quote consumption reporting is inaccurate and additional fees are assessed, Supplier shall be responsible for such additional fees. Notwithstanding the foregoing or anything contained in this Schedule or the Agreement, in the event a Third Party Licensor determines that Supplier under-reported quotes and such additional fees are assessed by such Third Party Licensor, JPMC shall be responsible for the actual number of quotes consumed by Subscribers; provided however, in such situation, JPMC shall not be responsible for any penalties assessed by a Third Party Licensor in connection with such under-reporting.

- Upon request, Supplier will provide a statistical usage report detailing real-time quote consumption, grouped by Third Party Licensor and User Identifiers, as sent by JPMC with each quote request.

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Supplier and JPMC will mutually agree with a format of such report.

- **Statistical Usage Report**: Upon request, Supplier will provide statistical usage reports to JPMC. Such reports are designed to include usage of market data consumption, real-time or delayed, grouped by Third Party Licensors (Exchange, as well as aggregate usage on Supplier hosted components. JPMC may request such monthly usage reports for the prior twelve (12) months.

9. Performance Schedule.

As per the Description of Deliverables Exhibit.

10. Location of Performance.

The primary location(s) for provision of the Services during the Schedule Term are as follows:

All business may be transacted remotely between parties. Services will be performed and physical meetings may be scheduled on an ad-hoc basis at primary JPMC offices locations including, but not limited to:

28 Liberty Street, New York, NY, USA
270 Park Ave, New York, NY, USA
383 Madison, New York, NY, USA
5 Manhattan West, York, NY, USA
1000 Polaris Pkwy, Columbus, OH, USA

The Supplier will use JPMC facilities only to provide the Services. All assets provided by JPMC will remain in the JPMC facility where those assets were initially located unless JPMC otherwise agrees in writing. JPMC may relocate any JPMC facility to another geographic location, or direct the Supplier to cease using all or part of a JPMC facility (in which event, JPMC will provide similar space in the same or an alternate JPMC facility). When any JPMC facility is no longer being used or otherwise required for performance of the Services, the Supplier will (a) promptly remove its property from that JPMC facility, and (b) return that JPMC facility to substantially the same condition it was in when the Supplier began to use that facility, subject to reasonable wear and tear.

In addition to the above, Services will be performed by Supplier remotely from the locations below. Supplier will not change any Service Location without JPMC's prior written consent.

5775 Flatirons Parkway, Boulder, CO USA – all services shall be provided from this location

Green Boulevard, Tower C, Plot B-9A, Sector 62, Noida, India – development, QA testing and production support shall be provided from this location

11. Fees

Fees are set forth in <u>Fees Exhibit</u>

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12. Invoicing

JPMC will be invoiced by the Supplier and pay such invoices in accordance with the terms of Section 5 of the Agreement. Invoices shall be sent to the following address:

JPMorgan Chase Bank, National Association
1111 Polaris Parkway
Columbus, Delaware
OH, 43240
United States
Attention: JPMC Relationship Manager

13. Reports

Upon JPMC's reasonable request, Supplier shall prepare a summary report in the format as agreed between the parties detailing the activities for the time period covered by the request and any open issues to be addressed by the Supplier and JPMC. In addition, the Supplier shall contact JPMC without undue delay by telephone, and if requested confirm by written notice, upon discovery of any problem that will materially delay the provision of any Deliverable.

14. Relationship Managers.

JPMC Relationship Manager	Supplier Relationship Manager
Name: **Frederick Duden**	Name: **Scott Kortgard**
Title: Managing Director	Title: Executive Director, Markit Digital
Telephone Number: W: +1-212-622-8406 M: +1-415-515-4915	Telephone Number: W: +1 646 679 3011 M: +1 612 702 4549
Email: frederick.duden@jpmorgan.com	Email: scott.kortgard@ihsmarkit.com
Address: 450 W 33rd St, Floor 16M New York, NY, 10001, United States	Address: 450 West 33rd Street, 5th floor	New York, NY 10001

JPMC Cybersecurity Contact	Supplier Cybersecurity Contact *
Name: Scott Dwelley	Name: Tier 1 Support
Title: Technology Control Officer, Digital	Title:
Work and Mobile Telephone Numbers: +1-603-896-8680 (work) +1-603-759-8458 (mobile)	Work and Mobile Telephone Numbers: +1.303.583.4308

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E-mail: scott.w.dwelley@jpmchase.com	E-mail: MOD-NOC@ihsmarkit.com
Address: 4 Northeastern Blvd, Floor 03 Salem, NH, 03079-5916, United States	Address: 5775 Flatirons Parkway Boulder, CO 80301

*At no additional expense to JPMC, the Supplier Cybersecurity Contact must (i) respond to all cyber-related inquiries within 24 hours, 7 days a week, and (ii) be available via mobile and SMS within 24 hours, 7 days a week (with back-up resources when the Supplier Cybersecurity Contact is either unavailable or out of the office ("**Back-Up**")). Supplier will immediately provide written notice to JPMC when the Supplier Cybersecurity Contact changes or when the Back-Up has the responsibility hereunder.

15. Subcontractor Personnel.

The following Subcontractor Personnel shall provide Services under this Schedule, and shall be regarded as approved by JPMC for the purposes of the Agreement:

NTT Data Services, LLC: Data Center Operations, Infrastructure as a Service (IaaS)
Globant: Development, Quality Assurance (QA), Dev/Ops

16. Additional terms and conditions applicable to this Schedule only (if any).

1. **Section 8.4, of Master Agreement CW280805, dated February 6th, 2009 Compliance with Laws, is hereby amended to append the following additional new paragraph thereof:**

"To the extent Supplier is providing, serving, or hosting Internet, email or portable device ready user interface elements or functionality, Supplier represents and warrants that such elements and functionality will conform to (i) the W3C Web Content Accessibility Guidelines Version 2.0 Level A & AA Success Criteria; (ii) any state or federal laws applicable to Internet, email or portable device accessibility, including the U.S. Americans with Disabilities Act; and (iii) the JPMC TPP WCAG Standards (located at https://www.jpmorganchase.com/corporate/About-JPMC/ab-personnel-policies.htm)."

2. Pursuant to Section 1.10 Competitive Advantage as a Result of Services of the Amendment 1 to the Agreement, JPMC and Supplier hereby acknowledge and agree that, in the event JPMC deems in its sole discretion that any of Deliverables provide JPMC a competitive advantage, the Supplier will not share or promote and in turn develop or implement any unique functionalities or designs as part of the Deliverables for any competitor of JPMorgan Chase & Co. for a period of twelve months after JPMC Accepts those Developed Works or Services. JPMC shall notify Supplier in writing of specific functionalities and designs it deems competitive prior to Supplier's development of the services; such notification shall include a clear description of specific design/functionality it deems unique. In addition, Supplier can provide similar services to JPMC competitors if Supplier already began working on solution with competitor prior to JPMC providing notice and Supplier can substantiate that solution to the satisfaction of JPMC.

[SIGNATURE PAGE TO FOLLOW]

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IN WITNESS WHEREOF, the parties have caused duly authorised representatives of their respective companies to execute this Schedule on the date or dates set forth below.

JPMorgan Chase Bank, National Association

By _Rajesh R. Parwatkar_
    C46151B79E3D4FB...

Name   Rajesh R. Parwatkar

Title   Vice President

Date   1/31/2019

Markit On Demand, Inc

By _Catherine Allegra_
    D028124950F0428...

Name   Catherine Allegra

Title   MD

Date   1/31/2019

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DESCRIPTION OF DELIVERABLES EXHIBIT

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1. Dates of Service.

The Services will start on 12/1/2018, and Deliverables are estimated to be completed on 12/31/2019 upon delivery JPMC acceptance.

2. Services to Be Performed.

Supplier will perform the following Services:
- o Supplier resources will be on retainer for:
  - Future amendments to work **SCHEDULE NO. 2**
  - Market data licensing and exchange reporting needs
  - Project roadmap management in alignment with JPMC sanctioned releases
  - Weekly checkpoints with JPMC design, architect, developer, and product teams
  - Developing and provisioning custom APIs and web content via component iFrame
    - — **For each service delivered as a hosted application (iFrame), the application will be accompanied by a restful API; JPMC can leverage the data available in the components via API for integration in other areas of the site and/or mobile app, if needed**
  - Provisioning responsive application to both web and mobile platforms (i.e. one code base for all platforms), as specified below:
    - — In scope:
      - o Variations by browser window size, including:
        - Fluid grid layout
          - Page modules shift with device breakpoints (card arrangement)
          - Flexible grids
          - Flexible media
        - Display in response to designated breakpoints
          - Content stacking
          - Content movement
          - Content scaling
          - Content omission
          - Smart content prioritization
          - Conditional loading
      - In-app modals
      - Consistent positioning of elements
      - Consistent styling of elements
        - Examples: buttons, font, colors, etc.
      - Consistent behaviors
        - Examples: navigation, modals, popovers, etc.
    - — Out of scope:
      - o The following functionality shall be subject to review to determine technical feasibility as designs are provided. If supported by Supplier, these items may incur additional fees and/or extend timelines.
        - Adaptive behavior
          - Introducing breakpoint-specific layouts and

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> > > elements (not simply fluid)
> > > - o Example: converting card layout on web to table layout on mobile
> > - Mobile/tablet-specific interactions
> > > - o Example: Actions that vary between web and mobile
> > - Custom styles:
> > > - o Examples: buttons, font, colors, etc. that are different between web and mobile
> > - o JPMC may request minor adaptive design elements which would be subject to Supplier's approval
> - Implementing JPMC provisioned designs, as mutually reviewed and agreed upon
>   — Designs need to reflect Supplier's API product capabilities
> - ADA compliance in accordance with WCAG 2.0 level A/AA as a minimum standard.
>   — JPMC shall consider compliance to the JPMC TPP WCAG Standard in designs provided to Supplier
>   — Supplier has the responsibility to adjust/modify designs as needed in order to conform to the JPMC TPP WCAG Standard
> - Network connectivity and authentication via OAuth extension grant for JWT and Client credentials grant
> - A single standalone test environment for integration, QA and performance testing.
> - Production support ticket tracking
> - Defect remediation
> - Adequate controls to ensure cyber vulnerabilities are identified and remediated. These controls should include but not be limited to: open source scanning, static scanning, dynamic scanning, penetration testing and firewall management;
> - Supplier's standard web/data analytics; in addition, Supplier shall integrate JPMC provided web analytics tags into analytics feed to JPMC Adobe Analytics
> - Mapping to JPMC's symbology
> - Unless otherwise specified below, JPMC will call Supplier's components and APIs on a request/response basis driven by end user page views of JPMC client portals
> - Unless otherwise specified below, a max of 200 symbols can be requested by JPMC in each quote API call

3. Deliverables to be Provided.

<u>JPMC</u> and <u>Supplier</u> agree that the requirements contained herein are for initial work estimates only and that refinement and final agreement may occur following the Schedule Effective Date.

Supplier will provide to JPMC the following Deliverables. In terms of priority, JPMC has requested and Supplier will deliver Options Quote & Chain first and Watchlist second. Requirements for each Deliverable shall be mutually agreed upon before Supplier commences development of the applicable Deliverable. Thereafter, any added requirements, including additional data sources, shall be subject to additional fees.

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    3.1   Option Chain & Chain Quote

- Description:
  - Option chain component with standard options chain quote information
- Core functionality:
  - Options chain app build with seamless experience for filtering on expirations, calls/puts, and strike counts with real-time options data:
    - — Expiration
    - — Strike
    - — Bid
    - — Ask
    - — Last
    - — Change $/%
    - — Volume
    - — Open Interest
    - — Delta
    - — Midpoint
    - — Breakeven
- Data sources facilitated by Supplier:
  - OPRA real-time and delayed data
- JPMC responsibilities:
  - Provide user identifiers (JPMC PIDs) for entitlements and quote counting
  - Provide hyperlinks to JPMC secure pages for contextual passing and redirects
  - Provide designs in accordance with API specifications from Supplier
- Assumptions
  - OPRA monthly quote reporting will be facilitated by Markit
  - This will be Markit Digital's standard Option API product.

    3.2   Option Quote APIs

- Description:
  - Options quote APIs
- Core functionality:
  - API for use case 1
    - — Request type: request/response driven by end user page views of JPMC client portals
    - — Input: Symbol
    - — Response: All Expirations (w/ flags for Monday/Wednesday/Weeklies/Monthlys)
  - API for use case 2
    - — Request type: request/response driven by end user page views of JPMC client portals
    - — Input: Symbol + Expiration
    - — Response: All Strikes
  - API for use case 3 (this can be used on the trading ticket for single option quote, real-time data for individual user holdings per request, or delayed data for scheduled snap use case for all client held option positions)
    - — Request types:

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- o Request/response driven by end user page views of JPMC client portals
- o Programmatic bulk request/response driven by a scheduled job which requests up to 15,000 symbols with up to 2,000 symbols/per request every 5 minutes during trading hours
- o Multi-Quote request to be utilized for bulk request process:
  - Initially, Supplier will support up to 200 symbols per request. In a subsequent release based on a mutually agreed upon timeline, Supplier increase support up to 2,000 symbols per request
  - Initially, Supplier will also support multi-threaded requests, enabling JPMC to send multiple requests in the same or near same second, with up to 200 symbols per request
    - — Input: One or more symbol/expiration/strike requests
    - — Response: for each option contract:
      - o Expiration
      - o Strike
      - o Last
      - o Change $/%
      - o Bid
      - o Bid size
      - o Ask
      - o Ask size
      - o Multiplier
      - o Midpoint
      - o Volume
      - o Open Interest
- o Data sources facilitated by Supplier:
  - OPRA real-time and delayed data
- o JPMC responsibilities:
  - Provide user identifiers for entitlements and quote counting
  - Provide hyperlinks to JPMC secure pages for contextual passing and redirects
- o Assumptions
  - Supplier will provide its standard Option Quote API product
  - OPRA monthly quote reporting will be facilitated by Supplier

3.3   Charts

- o Description:
  - Basic ("Basic Chart") and interactive ("Interactive Chart") HTML5 charts for stocks and funds
- o Core functionality:
  - Users can select:
    - — Timeframe (1 day, 5 day, 1 month, 3 month, 6 month, YTD, 1 year, 3 year, 5 year, 10 year, Max)
    - — Data intervals (daily, weekly, monthly)
    - — Graph types (Area, OHLC, HLC, Candlestick, Line, Bar, Dot)
    - — Crosshair

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- Users can apply chart overlays including:
  - Other securities / Benchmarks
  - Corporate events (earnings, dividends, splits)
  - Upper Indicators:
    - Bollinger Bands
    - Exponential Moving Average (EMA)
    - High / Low Price
    - Linear Regression
    - Moving Average Envelope
    - Price Channel
    - Parabolic SAR (PSAR)
    - Simple Moving Average (SMA)
    - Time Series Forecast (TSF)
    - Volume by Price
    - Weighted Moving Average (WMA)
  - Lower Indicators:
    - Accumulation / Distribution (ADL)
    - Average True Range
    - Awesome Oscillator
    - Bollinger Band %B
    - Bollinger Bands Width
    - Chaikin's Volatility
    - Dividend Yield
    - Directional Movement Index (DMI)
    - Fast Stochastics
    - Historical Dividend
    - MACD
    - Mass Index
    - Momentum
    - Money Flow
    - Money Flow Index
    - On Balance Volume
    - Price Rate of Change (PROC)
    - Relative Strength Index (RSI)
    - Slow Stochastics
    - Ultimate Oscillator
    - Volume
    - Volume Rate of Change (VROC)
    - Williams %R
  - Drawing / Annotation tools:
    - Text box
    - Trend line
    - Horizontal line
    - Ray
    - Extended line
    - Arrow
    - Ellipse
    - Rectangle
    - Fibonacci Retracement
    - Fibonacci Arc

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- o Fibonacci Circle
- o Gann Fan
- Users can zoom in and out of chart with dynamic X & Y axis panning
- Users can grab and drag horizontally with dynamic X & Y axis panning
- Users can save and load chart templates
- Users can export chart to user device

o Data sources facilitated by Supplier:
- Stock exchanges: NYSE (delayed), NASDAQ (delayed), NASDAQ Basic (real-time), OTC (delayed)
- Indices (for chart comparisons): DJIA (delayed & real-time), S&P 500 (delayed & real-time), NASDAQ Composite (delayed & real-time)
- Performance data (for compare)
- Fundamental data (for fundamental events, to be used in overlays)

o JPMC responsibilities:
- Provide user identifiers (JPMC PIDs) for entitlements, quote counting and saving charts
- Provide user actions (for export)

o Assumptions:
- Supplier will provide its existing client-side charting libraries
- Charting capabilities will gracefully degrade when shown on mobile device respecting the responsive nature of the site https://www.chartworks.io/Documentation/html5#small-template-779px-wide-or-less
- Exporting chart will consist of downloading an image of the chart to client device

3.4 Watchlist

o Description:
- Watchlist to allow user to create and track securities within a watchlist

o Core functionality:
- Baseline functions will be:
  — Create new watchlist from main Watchlist page
  — Create new watchlist from 'Add to Watchlist' button pattern
  — Add symbol from quote detail page
  — Toggle to different user watch lists
  — Quote detail side panel slide-in (invoked when clicking symbol from watchlist)
  — Add symbol from quote detail side panel slide-in (invoked when clicking symbol from watchlist)
  — Initiate trade from watch list; user will be redirected to JPMC's trading page from watchlist
- Data points:
  — Symbol/Name
  — Price / Day Change ($/%)
  — Day Range
  — 52-week range w/ visual
  — Disclaimer text in close proximity to quote, providing time stamp for quote
  — Delayed pricing data for non-investment customers

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— NASDAQ Basic real-time stock/ETF pricing data for investment customers
— New functions beyond JPMC's existing watchlist will include:
— Add symbol(s) from main watch list page
— Remove multiple symbols from user watch lists (multi-select)
— Delete user watch lists
— Rename user watch lists
— Sort user watch list columns
— Additional data points for custom views:
— Change since added ($/%)
— Basic Stock/ETF/Fund fundamentals (Market cap, EPS, P/E ratio, Dividend Yield, Ex-Dividend date, etc…)
— Performance data (YTD, 1 mo, 3 mo, 6 mo, 1 yr, 3 yr, 5 yr, 10 yr)
— J.P. Morgan equity research:
  o Rating
  o Price Target
  o Quarterly Earnings Estimates / Actuals
  o Yearly Earnings Estimates / Actuals
  o PDF report link
- Watch list securities listed in tile pattern w/ spark line chart
- View and add recently searched, by user, securities to user watch list from main watch list page (recycles last 10 securities viewed); JPMC will pass symbols to Markit
- View recently searched securities to user watch list from symbol lookup menu (recycles last 10 securities viewed; invoked on first click)
- View market insights, including Supplier's MIND events, for securities held in user watch list(s) including with 'Trade' CTA
- Universe of MIND events shall be mutually agreed upon between the parties and is subject to JPMC's content licenses
- Technical events (e.g. company xyz reached its 52-week high)
- Corporate events (e.g. company xyz dividend pay date is xx/xx)
- 3rd party research (e.g. Morningstar rating changes)
- JPM equity research (e.g. JPM price target change)
- Note: this section will be located in the right rail of the page and configurable by user to display events chronologically or by relevancy. Additionally, the user will be able to collapse/expand the section by toggle.
- Market indices
- Select/toggle to comparative line charts where user can view each securities' performance over time periods (YTD, 1mo, 3mo, 6mo, 1yr, 3yr, 5yr, and 10 yr).
- User can overlay additional benchmarks (i.e. DJIA, S&P500, Nasdaq).
  o Data sources facilitated by Supplier:
- Stock exchanges: NYSE (delayed), NASDAQ (delayed), NASDAQ Basic (real-time), OTC (delayed)
- Indices: DJIA (delayed & real-time), S&P 500 (delayed & real-time), NASDAQ Composite (delayed & real-time)
- Equity fundamentals: Morningstar
- Fund fundamentals and ratings: Morningstar DataWarehouse – U.S. funds
- Equity research: J.P. Morgan Research & Estimates

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> — JPMC may elect to include two (2) additional equity research sources currently available on Supplier's platform

- o JPMC responsibilities:
  - Provide user identifiers (JPMC PIDs) for saving watchlist symbols and preferences
  - Provide access to existing JPMC user watchlist symbols to upload/migrate in a mutually agreed upon format and timeline
  - Provide user actions (e.g. Recently viewed securities) in a mutually agreed upon format (e.g. REST API)
  - Provide entitlements as part of authentication handshake indicating whether user is entitled to real-time/delayed quotes.
  - Provide hyperlinks to JPMC secure pages for contextual passing and redirects.
  - Provide identifier for investment users.
  - Provide designs in accordance with API specifications from Supplier
- o Assumptions:
  - Users can create up to 20 individual watchlist with up to 50 symbols per watchlist.
  - JPMC will provide a consolidated file in a mutually agreed upon format (e.g. CSV) with mutually agreed upon symbology
  - If Supplier is required to integrate additional JPMC research at the database level, additional fees may apply

3.5   Stock Quote & Profile

- o Description:
  - Primary equity quote detail and profile page with snapshot performance measures, profile information, news and research
- o Core functionality:
  - View detailed quote information for stocks
  - View company description and key fundamentals
  - View Basic Chart with links to historical pricing data table and Interactive Chart
  - View company-specific news headlines with links to news article pages
  - View snapshot of JPMC equity research and estimate
  - View snapshot of ESG ratings
  - Link to Options Chain
  - Link to JPMC trade ticket
  - Ability to add symbol to Watchlist (a specific watchlist the user has set up)
- o Data sources facilitated by Supplier:
  - Stock exchanges: NYSE (delayed), NASDAQ (delayed), NASDAQ Basic (real-time), OTC (delayed)
  - Indices (for chart comparisons): DJIA (delayed & real-time), S&P 500 (delayed & real-time), NASDAQ Composite (delayed & real-time)
  - Equity profile and fundamentals: Morningstar
  - Equity research: J.P. Morgan Research & Estimates, MSCI ESG research/ratings
    - — JPMC may elect to include two (2) additional equity research sources currently available on Supplier's platform
  - Corporate events: Morningstar
  - Company news: Comtex Public Companies Select press release feed

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- — Supplier will sublicense Comtex Public Companies Select press release feed to JPMC and pass through content fees as per Fees Exhibit
- — JPMC may elect to include two (2) additional news sources currently available on Supplier's platform
  - o JPMC responsibilities:
    - Provide user identifiers (JPMC PIDs) for entitlements and quote counting
    - Provide hyperlinks to JPMC secure pages for contextual passing and redirects
    - Provide access to J.P. Morgan Research & Estimates via restful API, if required
    - Provide designs in accordance with API specifications from Supplier
  - o Assumptions
    - Supplier will integrate J.P. Morgan Research & Estimates within Stock Quote & Profile via a request/response API provided by JPMC
      - — If Supplier is required to integrate additional JPMC research at the database level, additional fees may apply
    - JPMC shall be responsible for ensuring this API meets any required performance standards
    - The parties shall mutually agree upon an appropriate authentication protocol for Supplier to access the API

3.6   Symbol Search API

  - o Description:
    - Predictive type ahead API to allow users to search for securities to view quotes
    - Ability to search for securities by ticker or company/fund name

3.7   Mutual Fund Quote & Profile

  - o Description:
    - Primary mutual fund quote detail and profile page with snapshot performance measures, (both gross and net of fees) profile information and rating
  - o Core functionality:
    - View NAV and key performance information
    - Fund description/profile
    - Fund characteristics including sector and geographical breakdown
    - Fund ratings
      View Basic Chart with links to historical pricing data table and Interactive Chart
    - Link to JPMC trade ticket - Supplier to process two files: tradable funds at JPMC, tradable funds for You Invest
    - Ability to add symbol to Watchlist (a specific watchlist the user has set up)
    - Portfolio Composition - X-ray level (asset allocation / sector weights / regional exposure / market cap)
    - Top 10 holdings
    - Growth of 10K over various timeframes (1 year, 5 year, 10 years, etc) including both gross and net of fees
  - o Data sources facilitated by Supplier:
    - Stock exchanges: NASDAQ NFN quote data (real-time MFQS daily valuation data)

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- Fund fundamentals and ratings: Morningstar DataWarehouse – U.S. funds
  - o JPMC responsibilities:
    - Provide hyperlinks to JPMC secure pages for contextual passing and redirects
    - Provide designs in accordance with API specifications from Supplier
    - To pass two files: tradable funds at JPMC, tradable funds for You Invest
  - o Assumptions
    - Supplier will leverage is client-side charting library for charting
    - Requirements for the tradable funds file integration need to be determined and additional fees may apply

3.8   ETF Quote & Profile

  - o Description:
    - Primary ETF quote detail and profile page with snapshot performance measures, profile information and rating
  - o Core functionality:
    - View price and key performance information
    - Fund description/profile
    - Fund characteristics including sector and geographical breakdown
    - Fund ratings
    - View Basic Chart with links to historical pricing data table and Interactive Chart
    - Link to Options Chain
    - Link to JPMC trade ticket
    - Ability to add symbol to Watchlist (a specific watchlist the user has set up)
    - Portfolio Composition - X-ray level (asset allocation / sector weights / regional exposure / market cap)
    - Top 10 holdings
  - o Growth of 10K over various timeframes (1 year, 5 year, 10 years, etc)Data sources facilitated by Supplier:
    - Stock exchanges: NYSE (delayed), NASDAQ (delayed), NASDAQ Basic (real-time), OTC (delayed)
    - Indices (for chart comparisons): DJIA (delayed & real-time), S&P 500 (delayed & real-time), NASDAQ Composite (delayed & real-time)
    - Fund fundamentals and ratings: Morningstar DataWarehouse – U.S. funds
  - o JPMC responsibilities:
    - Provide user identifiers (JPMC PIDs) for entitlements and quote counting
    - Provide hyperlinks to JPMC secure pages for contextual passing and redirects
    - Provide designs in accordance with API specifications from Supplier
  - o Assumptions
    - N/A

3.9   Stock Quote & Profile – Extended Quotes & OTC Notification

  - o Description:
    - Add pre and post market quotes to Stock Quote & Profile component, Basic Chart and Interactive Chart
    - Add message notifying users they are viewing an OTC pink sheets stock trading at less than $5

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- o Core functionality:
  - View extended hours quotes
  - Alert users who are viewing Penny stock / Pink / Grey message for OTC securities under $5
- o Data sources facilitated by Supplier:
  - Stock exchanges: NYSE (delayed), NASDAQ (delayed), NASDAQ Basic (real-time), OTC (delayed)
  - Indices (for chart comparisons): DJIA (delayed & real-time), S&P 500 (delayed & real-time), NASDAQ Composite (delayed & real-time)
- o JPMC responsibilities:
  - Provide designs in accordance with API specifications from Supplier
- o Assumptions
  - N/A

3.10   Stock Top Holders

- o Description
  - Top mutual fund and ETF holders of a stock
- o Core functionality:
  - View list of mutual funds and ETFs with largest holdings of the specified stock
- o Data sources facilitated by Supplier:
  - Top 10 holdings: Morningstar DataWarehouse – U.S. mutual funds and ETFs
- o JPMC responsibilities:
  - Provide designs in accordance with API specifications from Supplier
- o Assumptions
  - N/A

3.11   Stock Fundamentals

- o Description
  - Detailed fundamental performance information added to the Stock Quote & Profile component
  - Components for financials statements (income statement, balance sheet, cash flow)
- o Core functionality:
  - View various fundamental data and performance for stocks
- o Data sources facilitated by Supplier:
  - Equity profile and fundamentals: Morningstar
- o JPMC responsibilities:
  - Provide designs in accordance with API specifications from Supplier
- o Assumptions
  - N/A

3.12   Stock Performance Comparison

- o Description
  - Performance of specified stock compared to its industry peers and benchmarks (indices/sector/subsector)

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- o Core functionality:
    - View various price performance comparisons for stocks
- o Data sources facilitated by Supplier:
    - Equity profile and fundamentals: Morningstar
- o JPMC responsibilities:
    - Provide designs in accordance with API specifications from Supplier
- o Assumptions
    - N/A

3.13 Stock Research

- o Description
    - Ratings, research and earnings estimates for a specified stock
- o Core functionality:
    - View research data and reports for stocks
- o Data sources facilitated by Supplier:
    - Research: J.P. Morgan Research & Estimates
    - 3rd party research provider(s) as mutually coordinated between JPMC and Supplier
- o JPMC responsibilities:
    - JPMC will be responsible for delivering JPMC research to Supplier for integration in Stock Research component(s)
    - Provide designs in accordance with API specifications from Supplier
- o Assumptions
    - N/A

3.14 Stock ESG Research

- o Description
    - Environmental, social and governance ratings for a specified stock
- o Core functionality:
    - View ESG research data and reports for stocks
- o Data sources facilitated by Supplier:
    - Research: MSCI ESG research
- o JPMC responsibilities:
    - Provide designs in accordance with API specifications from Supplier
- o Assumptions
    - N/A

3.15 Stock News

- o Description
    - News delivery and exploration capabilities for a specified stock
- o Core functionality:
    - Filter news by various parameters including source, news category, keywords/phrase, timeframe
- o Data sources facilitated by Supplier:
    - News: Comtex
        — JPMC may elect to include two (2) additional news sources currently

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available on Supplier's platform
- o JPMC responsibilities:
  - JPMC will be responsible for delivering JPMC research to Supplier for integration in Stock Research component(s)
  - Provide designs in accordance with API specifications from Supplier
- o Assumptions
  - N/A

3.16   Mutual Fund Quote & Profile – Additional Detail

- o Description:
  - Additional content/modules added to Mutual Quote & Profile
- o Core functionality:
  - Additional ratings
  - Peer comparison; peer comparison methodology shall be mutually agreed upon between the parties
  - ESG details
- o Data sources facilitated by Supplier:
  - Fund fundamentals and ratings: Morningstar DataWarehouse – U.S. funds
  - Other research/ratings?
- o JPMC responsibilities:
  - Provide designs in accordance with API specifications from Supplier
  -
- o Assumptions
  - N/A

3.17   ETF Quote & Profile – Additional Detail

- o Description:
  - Additional content/modules added to ETF & Profile
- o Core functionality:
  - Additional ratings
  - Peer comparison
  - ESG details
- o Data sources facilitated by Supplier:
  - Fund fundamentals and ratings: Morningstar DataWarehouse – U.S. funds
  - Other research/ratings?
- o JPMC responsibilities:
  - Provide designs in accordance with API specifications from Supplier
  -
- o Assumptions
  - N/A

3.18   International Stock Quote

- o Description:
  - Detailed quote information for stocks listed outside of U.S.

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- o Core functionality:
  - View detailed quote information and charts for international stocks
  - News headlines (subject to availability from news sources)
  - Ability to add symbol to Watchlist (a specific watchlist the user has set up)
- o Data sources facilitated by Supplier:
  - Stock exchanges:

International Exchanges	Currency	Currency Name
Bovespa (Sao Paulo Stock Exchange)	N/A	N/A
Copenhagen Stock Exchange	EUR	Euro
Deutsche Boerse Indices and Xetra ETF	EUR	Euro
Deutsche Boerse Xetra Core	EUR	Euro
Euronext All Indices	EUR	Euro
Euronext Cash	EUR	Euro
Exfeed Indices	N/A	N/A
Exfeed Securities	CHF	Swiss Franc
FTSE Indices	GBP	Pound
Hang Seng Indices	HKD	Hong Kong Dollar
Hong Kong Securities	HKD	Hong Kong Dollar
Irish Stock Exchange	EUR	Euro

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London Stock Exchange	GBP	Pound
Nikkei 5 Updates	N/A	N/A
Oslo Stock Exchange	NOK	Norwegian Krone
Toronto Stock Exchange (TSX/TSXV)	USD	United States Dollar

- Indices (for chart comparisons): DJIA (delayed & real-time), S&P 500 (delayed & real-time), NASDAQ Composite (delayed & real-time)
- International indices (delayed):
  - CAC40
  - DAX
  - FTSE 100
  - Hang Seng
  - Nikkei 225
  - SMI

- o JPMC responsibilities:
  - Provide user identifiers (JPMC PIDs) for entitlements and quote counting
  - Provide hyperlinks to JPMC secure pages for contextual passing and redirects
  - Provide designs in accordance with API specifications from Supplier
- o Assumptions
  - N/A

3.19 Market Overview

- o Description:
  - Key market indicators across regions, securities, benchmarks and events
- o Core functionality:
  - Today's Market summary / analysis message
  - Basic charting for indices
  - Regions/Instruments
  - US
    - DJIA
    - NASDAQ
    - S&P 500
    - NYSE
    - AMEX

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- Global

  CAC40
  DAX
  FTSE 100
  Hang Seng
  Nikkei 225
  SMI

- Currencies

  U.S. Dollar
  Argentinean Peso
  Brazilian Real
  Canadian Dollar
  Chilean Peso
  Dominican Peso
  Mexican Peso
  British Pound
  Czech Koruna
  Danish Krone
  European Euro
  Hungarian Forint
  Norwegian Krone
  Polish Zloty
  Russian Ruble
  Swedish Krona
  Swiss Franc
  Australian Dollar
  Renminbi
  Hong Kong Dollar
  Indian Rupee
  Indonesian Rupiah
  Japanese Yen
  Malaysian Ringgit
  New Zealand Dollar
  Pakistani Rupee
  Singapore Dollar
  South Korean Won
  Taiwanese Dollar
  Thai Baht
  Egyptian Pound
  Israeli Shekel
  South African Rand
  Turkish Lira
  UAE Dirham

- Bond & treasury yields
- Economic Events
  — Producer price index
  — Consumer price index
  — Treasury budget

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- — Existing home sales
- — GDP
- — S&P Case-Shiller HPI
- — Crude oil inventories
- — Fed Funds rate & FOMC forecasts
- Sectors and Industries
- Actives/Gainers/Losers for each region, sector and industry and visuals
- Historical performance for each region, sector and industry and visuals
- Comparison for each region, sector and industry and visuals (P/E, Earnings Yield, Earnings Growth, Revenue Growth, etc)
- Economic calendar – summary view
- Upcoming company events (earnings, acquisitions, etc), as available from data source – summary view with link to detailed Market Calendar
- Market news

- o Data sources facilitated by Supplier:
  - Leverage data entitlements from Deliverables above, including stock exchanges, indices, news, research and other benchmarks
  - Economic events from Econoday or a 3rd party data provider alike available on Suppliers platform, as mutually agreed upon between JPMC and Supplier
- o JPMC responsibilities:
  - Provide user identifiers (JPMC PIDs) for entitlements and quote counting
  - Provide hyperlinks to JPMC secure pages for contextual passing and redirects
  - Provide designs in accordance with API specifications from Supplier
- o Assumptions
  - N/A

3.20 Market Calendar

- o Description:
  - Calendar of key U.S. economic and company events
- o Core functionality:
  - Economic calendar
  - Upcoming company events (earnings, acquisitions, etc)
  - Stock analyst upgrades/downgrades (subject to content licensing)
- o Data sources facilitated by Supplier:
  - Economic calendar: Econoday
  - Corporate events: Morningstar
  - Analyst research
- o JPMC responsibilities:
  - Provide designs in accordance with API specifications from Supplier
- o Assumptions
  - N/A

3.21 News & Events Experience

- o Description:
  - News and events tailored to user's holdings, watchlist, and recently viewed

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securities
- o Core functionality:
  - Display events (e.g. earnings, dividends, corporate actions, technical analysis etc.) relevant to user's holdings, watchlist and browsing behavior
- o Data sources facilitated by Supplier:
  - Leverage data entitlements from Deliverables above
- o JPMC responsibilities:
  - Provide designs in accordance with API specifications from Supplier
- o Assumptions
  - N/A

3.22 Stock Research Overview

- o Description
  - Landing page key equity research information
- o Core functionality:
  - View various summaries of research content, including:
    — New coverage
    — Changes (price target, ratings, etc)
    — Earnings surprises
    — Top analysts
    — Improved ESG
    — Potential breakouts
  - Launch into research reports and more research on a specific stock (Stock Research)
- o Data sources facilitated by Supplier:
  - Equity research: J.P. Morgan Research & Estimates, MSCI ESG research/ratings
    — JPMC may elect to include two (2) additional equity research sources currently available on Supplier's platform
- o JPMC responsibilities:
  - JPMC will be responsible for delivering JPMC research to Supplier for integration in Stock Research Overview
  - Provide designs in accordance with API specifications from Supplier
- o Assumptions
  - If Supplier is required to integrate additional JPMC research at the database level, additional fees may apply

4. Requirements.

Supplier's Services and Deliverables will meet the following requirements:

- Initial Load - Pass to Markit
- Investment user
- Trade enabled
- Options enabled
- Profile ID
- Pro/non pro
- Styling: CPO or JPO
- Navigation / Context Passing

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- Equity/Mutual Fund/Options trade ticket from 'Trade' button
- Watch list migration & storage
- Recently searched symbols
- Add symbol to Watch list (initially from legacy quote page)
- Add symbol to Watch list from Recently searched symbol search fly-out
- Option trade ticket redirect from Chain
- Symbol search type-ahead hand-off
- Slide in panels iFrame takeover
- Analytics tags

Browser Support. Browser compatibility for Client's Web site shall be maintained for IFRAME/API for the 4 most commonly used browsers (Internet Explorer, Mozilla FireFox, Google Chrome, and Apple Safari) outlined below. For Internet Explorer, note that emulated older versions are not supported. Emulation refers to "Compatibility Mode", which forces a newer version of IE to emulate an older version.

- Microsoft Edge (any version)
- Internet Explorer 11 and higher
- Firefox 35.0 and higher
- Chrome 38.0 and higher
- Safari 7.1 and higher

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Market Data Licensing & Reporting

	Deliverable	Estimated Date	Milestone Group	Market Data Licensing & Reporting	
1	**Options Chain & Chain Quote**	Q1 2019	1	OPRA	OPRA RT snap and/or Delayed
2	**Option Quote API**	Q1 2019	1	OPRA	OPRA RT snap and/or Delayed
3	**Watchlist**	Q1 2019	1	Nasdaq	NASDAQ RT snap and/or Delayed
				Nasdaq	OTCBB RT snap and/or Delayed
				Nasdaq	Nasdaq Basic RT snap
				Nasdaq	Nasdaq NFN (Mutual Funds)
				NYSE	NYSE, NYSE American (formerly AMEX) RT snap and/or Delayed
				NYSE	NYSE Corporate Actions (dividends, splits)
				OTC Markets Inc	PINKSHEET RT snap and/or Delayed

Morningstar existing:			
Agreement	**JPM CW#**	**Investment Universes**	**Use/Distribution**
Product License Agreement (main)	CW537634	OE, CE, ETF	Retail and Advisor use detailed in agreement
Amend 1	CW634460	Added: ETF (expanded data set for private bank use) and UIT	Private Bank – client reporting

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Amend 2	CW815531 - renewal	OE, CE, ETF, UIT	Reduced distribution to account for JPM divesting of custodial platform for third party, non JPM advisors
Amend 3	CW951781	Added: US ETF End of Day Prices	

Additional Morningstar (pending):
- U.S. Stock Data Packages:
    - ► Morningstar® Company and Share Class Reference License
    - ► Morningstar® Company Profiles Package
    - ► Morningstar® Asset Classification Package
    - ► Morningstar® Performance and Performance Statistics Package
    - ► Morningstar® Fundamentals Package
    - ► Morningstar® Corporate Actions Package
    - ► Morningstar® Ownership Package
    - ► Morningstar® Short Interest Package
    - ► Morningstar® Estimates Package
    - ► Morningstar® Corporate Communications Package
    - ► Morningstar® Executive Insight Package

4	**Charts**	Q2 2019	2	Everything above +	
				CBOE	CBOE (S&P 500 Index) RT snap and/or delayed
				Dow Jones	Dow Jones Index RT snap and/or delayed
				Nasdaq	Nasdaq GIDS (Nasdaq Composite Index) RT snap and/or delayed
5	**Stock Quote & Profile**	Q2 2019	2	Everything above + • Comtex Public Companies Select news feed Additional news (pending): • Benzinga	

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6	**Symbol Search API**	QX 2019	2	Everything above
7	**Mutual Fund Quote & Profile**	QX 2019	2	Everything above
8	**ETF Quote & Profile**	QX 2019	2	Everything above
9	**Stock Quote & Profile – Extended Quotes & OTC Notification**	QX 2019	3	Everything above
10	**Stock Top Holders**	QX 2019	3	Everything above
11	**Stock Fundamentals**	QX 2019	3	Everything above
12	**Stock Performance Comparison**	QX 2019	3	Everything above
13	**Stock Research**	QX 2019	3	Everything above + - Morningstar® Estimates Package (pending; if not secured during Milestone 1) - CFRA Research (Pending)
14	**Stock ESG Research**	QX 2019	3	Everything above + • MSCI ESG Research
15	**Stock News**	QX 2019	3	Everything above + Additional news (pending; if not secured during Milestone 2): • Benzinga
16	**Mutual Fund Quote**	QX 2019	3	Everything above

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	& Profile – Additional Detail			
17	**ETF Quote & Profile – Additional Detail**	QX 2019	3	Everything above
18	**International Stock Quote**	QX 2019	3	Everything above + • International indices (delayed): CAC40 DAX FTSE 100 Hang Seng Nikkei 225 SMI • International exchanges (delayed):

	Bovespa (Sao Paulo Stock Exchange)
	Copenhagen Stock Exchange
	Deutsche Boerse Indices and Xetra ETF (DAX)
	Deutsche Boerse Xetra Core
	Euronext All Indices (CAC 40 Index)
	Euronext Cash
	Exfeed Indices (Swiss Market Index/SMI)
	Exfeed Securities
	FTSE Indices (FTSE 100)
	Hang Seng Indices (Hang Seng Index/HSI)

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				Hong Kong Securities	
				Irish Stock Exchange	
				London Stock Exchange	
				Nikkei 225 Index - 5 Updates Daily	
				Oslo Stock Exchange	
				Toronto Stock Exchange (TSX/TSXV)	
19	**Market Overview**	QX 2019	4	Everything above + • Currencies 　U.S. Dollar 　Argentinean Peso 　Brazilian Real 　Canadian Dollar 　Chilean Peso 　Dominican Peso 　Mexican Peso 　British Pound 　Czech Koruna 　Danish Krone 　European Euro 　Hungarian Forint 　Norwegian Krone 　Polish Zloty 　Russian Ruble 　Swedish Krona 　Swiss Franc 　Australian Dollar 　Renminbi 　Hong Kong Dollar 　Indian Rupee 　Indonesian Rupiah 　Japanese Yen	

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				Malaysian Ringgit New Zealand Dollar Pakistani Rupee Singapore Dollar South Korean Won Taiwanese Dollar Thai Baht Egyptian Pound Israeli Shekel South African Rand Turkish Lira UAE Dirham
20	**Market Calendar**	QX 2019	4	Everything above + • Econoday or comparative supported by Supplier for corporate calendar (pending)
21	**News & Events Experience**	QX 2019	4	Everything above
22	**Stock Research Overview**	QX 2019	4	Everything above

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<p style="text-align:center">**SERVICE LEVELS EXHIBIT**</p>

<p style="text-align:center">**EXHIBIT B**</p>

<p style="text-align:center">**SERVICE LEVELS**</p>

1. DEFINITIONS.

The following terms will have the following meanings when used in this Schedule:

"Credit" means one (1) percent of the Fee for the Services during the Measurement Period.

"Disruptive Maintenance" means a Measurement Interval during which the Services or System is unavailable due to maintenance, of which JPMC has received, at least five (5) business days prior notice.

"Downtime" means a Measurement Interval during which Supplier fails to provide the full functionality of the Services and System, excluding Disruptive Maintenance.

"End User" means the ultimate user of the System in a production environment.

"Incident" means any issue that prevents the System from functioning as intended in a production environment.

"Incident Response" means Supplier's standard process for handling Incidents, including internal and external communication, documentation and resolution.

"Incident Manager" means Supplier staff trained in Incident Response; capable of coordinating Incident investigation and responsible for communicating technical details to JPMC and Supplier staff.

"Measurement Interval" means one minute.

"Measurement Period" means one month, less any Disruptive Maintenance.

"Resolution Time" means the elapsed clock time between (i) JPMC's Service Call to report a problem and (ii) implementation of a change in or adjustment to the System that corrects the problem and causes the System to be in Compliance and operate without malfunction.

"Response Time" means the elapsed clock time between (i) the Service Call to report a problem and (ii) a Supplier technical support analyst capable of understanding the problem speaking to JPMC's support contact about the problem.

"Right of Termination for Deficiency" means JPMC's right to terminate the Services without penalty, effective upon notice to Supplier, which may be exercised within 30 days following the completion of the applicable Measurement Period.

"Service Network" means the network used by Supplier to provide the services.

"Third Party" means any service, data or content provider that is neither the JPMC nor Supplier.

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"Workaround" means a solution that resolves a problem without decreasing System features, functionality or performance or resulting in an added burden or expense to JPMC.

2.   RESPONSE AND ESCALATION SERVICES.

Supplier will respond to any and all Incidents, requests for maintenance, support services escalations, or queries via its Tier 1 Support Center ("Tier 1") 24 hours a day, 7 days per week, 365 days per year. Tier 1 can be reached at MOD-NOC@ihsmarkit.com or +1.303.583.4308. Response to any escalation will be from a technical incident responder in the Tier 1 and not an automated reply.

Upon notice of any Incident related to any part of the services provided by Supplier to JPMC, Tier 1 personnel will initiate the Incident Response procedure and provide the Supplier tracking ticket number within 15 minutes. Tier 1 will respond within 15 minutes of receiving notice of the Incident, regardless of severity level.

For all issues classified "Sev 1 –Total Outage" or "Sev 2 – Major Outage" as per Table 2 below, Tier 1 will contact an Incident Manager in conjunction with creating the initial tracking ticket. The Incident Manager will join the investigation within 15 minutes during Supplier's core support hours (24 hours a day, Monday through Friday, excluding holidays) and within 30 minutes otherwise (including weekends). The Incident Manager will provide JPMC with proactive status updates via email or phone.

Supplier will respond to Incidents, requests for maintenance, support service escalations, or queries from JPMC or approved representatives of JPMC only. Should an End User contact Supplier directly, Supplier will (i) instruct the End User to contact JPMC directly and (ii) request the Project Manager to follow up with JPMC.

Incident Severity Determination: Supplier will classify escalation severity level for any Incident (whether reported by JPMC or via Supplier internal monitoring alert) according to the criteria in Table 2.

If, as a result of the ongoing investigation, severity is determined to be lower or higher than initially observed, Supplier will reset severity level and response expectations.

Incidents caused by Supplier third party vendors (contracting directly with Supplier) will be classified and handled the same as Supplier-related issues.

3.   SERVICE LEVELS

System Operation Service Levels. Supplier will provide the Services to JPMC so that all of the quantitative measurements set forth in the first column of Table 1 below (each, a "Metric") satisfy the corresponding specifications set forth in the second column of Table 1 below (each, a "Standard"). If any Metric does not satisfy one or more of its corresponding Standards, then JPMC will be entitled to receive the corresponding remedy(ies) set forth in the third column of Table 1 (each, a "Remedy").

Table 1. Service Levels for System Operation

Metric	Standard	Remedy
Availability – Percentage of Measurement Intervals that are not Downtime	99.89% + of each Measurement Period	One Credit for each 0.5 percentage points below Standard
	98.00% + of any Measurement Period	Right of Termination for Deficiency

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System Response Time – Percentage of requests that satisfy the System Response Time Requirement	See "System Response Time Requirement" section below 96% or less meeting Requirement	See "System Response Time Requirement" section below Right of Termination for Deficiency
Total Credits accumulated during any Measurement Period	20 Credits	Right of Termination for Deficiency

Response and Resolution Times. Supplier will respond to and resolve problems so as to meet all of the Service Levels in Table 2 below. If Supplier does not satisfy one or more of those Service Levels, JPMC will be entitled to receive the credits specified below. (For example, if Supplier provides a Workaround for a Priority 1 problem in eight hours, Supplier will owe four Credits. Such credits will be deemed to be price reductions reflecting a diminution in the value of such services as a result of the failure to meet the service levels rather than liquidated damages or a penalty. Any failure by Supplier to meet any service levels rather than liquidated damages or a penalty. Any failure by Supplier to meet any service level two or more times in any six-month period will be deemed a material breach by Supplier that is incapable of cure.

Notice of Delayed Resolution. If Supplier does not resolve a problem within the Resolution Times listed in Table 2 below, Supplier will immediately notify JPMC. This notice will include (i) a reasonable explanation for the delay and (ii) a good faith schedule and plan for correction. This notice will not constitute an excuse or waiver of performance. Supplier will keep JPMC informed of the progress of its efforts to resolve Severity 1 or 2 problems at appropriate intervals or as requested by JPMC.

4. Availability Requirement

Supplier will ensure that the System will be available at least 99.9% of the time as measured over each calendar month during the Term ("Availability Requirement").

Monitoring Approach: Supplier will choose one or more pages of the System to monitor in order to determine Availability. Page selections will be reviewed with the JPMC to ensure appropriateness. Each page will be monitored continuously from more than one location outside of Supplier's network on a round-robin basis at least once per minute. A page fails a monitoring test if two monitoring locations fail to access a page in two successive tries from each monitoring location.

Availability Calculation: Availability will be calculated at the end of each month based on data provided by Supplier's external monitoring provider. A page will be considered to be unavailable from the time of the first failure until the first subsequent success. All such intervals will be reviewed and validated by Supplier. Availability will then be calculated as the sum of all periods during which the page was available during the calendar month, divided by the total time in the month. One percentage will be calculated per month.

Exclusions: Any failure due to an outage of a Third Party will be excluded from the Availability calculation.

5. System Response Time Requirement

Supplier will ensure that the Customized Solution meets specific targets as set forth below ("System Response Time Requirement").

Monitoring Approach: Each request will be continuously monitored from more than one location outside of Supplier's network on a round-robin basis at least once per minute. System response time will be

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recorded by Supplier's external monitoring provider. System response times will not be considered for failures, as failures are addressed by the Uptime Requirement.

System Response Time Calculation: Response Time will be calculated at the end of each month based on data provided by Supplier's external monitoring provider. The percentage of requests that satisfy the Response Time Requirement shall be the number that completed in less than the associated target time divided by the total number of requests that completed successfully. One percentage will be calculated for each request during the month.

Exclusions: Any impact due to a Third Party will be excluded from the System Response Time Requirement calculation.

Credits: If, in any calendar month during the Term, Supplier falls below the System Response Time Requirement, then without limiting any other right or remedy to which Client may be entitled as a result of such System Response Time, whether under this Agreement, at law or in equity, Supplier will grant JPMC a proportional credit for that month based on the table set forth below, calculated as follows: the percentage set forth in the table below multiplied by the Service Fees due to for the same period. If multiple requests fail to meet the System Response Time Requirement in a given month, the total Credits shall be the largest of the individual Credits.

For clarity, the page to be monitored for the System Response Time Requirement and the System Response Time Target shall be:

Request and Target	Percentage of Requests meeting Requirement	Credit
API Response Times: Number of Securities per Request Average 10-30 fields per security per response 95% of the time – Response Time SLA within the Vendor Infrastructure: 1-5 symbols <100 milliseconds 6-10 symbols < 150 milliseconds 11-25 symbols < 300 milliseconds 26-50 symbols < 600 milliseconds 51-100 < 1000 milliseconds 101 -200 symbols < 1500 milliseconds* Over 200 symbols No specific SLA Listed Options Chain for a Underlying Equity/Index 95% of the time -	98.00-98.99% 97.00-97.99% 96.99% or less	One Credit Two Credits Three Credits

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Response Time SLA within the Vendor Infrastructure: Up to 100 nodes in the Chain <1500 milliseconds **Hosted Components Response Time:** Options Chain <3000 milliseconds Watchlist <3000 milliseconds Stock Quote & Profile <3000 milliseconds		

michael@justbuildit.com - Jul 29, 2024, 1:14:36 PM America/New_York

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6. REPORTS.

Supplier will provide to JPMC, upon written request, within 15 business days of the end of each calendar month during the term of this Schedule, a report or series of reports that cover, at a minimum, the following information regarding the performance of the System and Services:

7. To be automated for distribution to JPMC on a monthly basis (Issue Response):

(A) the Service Credits earned by JPMC;

(B) the monthly System Availability percentage;

(C) monthly reporting on System Response Time Requirement;

(D) the number of client reported Issues received during the preceding month; date and time received; date and time that Issue was closed for Issues resolved during previous month; and a listing of all outstanding problems;

(E) a summary of JPMC requests for upgrades and/or modifications to the System; and

8. To be distributed to JPMC upon occurrence and/or request (Demand Management):

(A) a summary of actions taken or planned to remedy any failure by Supplier to meet any of the Service Levels set forth in this Exhibit.

(B) Post Mortem - Markit will provide detailed reporting for all Sev 1 – Total Outage or Sev 2 – Major Outage Incidents, including a summary of the Incident and its impact, chronology of actions taken, time to resolution, lessons learned, and opportunities for improvement. Such report will be delivered to Client within five (5) business days of the resolution of the Incident.

(C) Ad-hoc Reports – To the extent that the information requested from JPMC is available

For avoidance of doubt, the foregoing reports are in addition to any reports and analytics described elsewhere in this Agreement.

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9.   Incidents and Software Errors Severity Level - JPMC Definition

Severity Level	Description	Examples
P1 - Critical	(a) IFRAME/API is non-operational, resulting in a critical condition or a critical impact on Client's business, requiring immediate Workaround or Resolution. Incidents that cannot be resolved by Level 1 Support within one (1) hour will be immediately escalated to Supplier's Level 2 customer support. Support personnel will continuously work to resolve the problem(s) and will apprise Client of the status every hour. Supplier will assign a crisis manager who shall be responsible for and manage the Resolution of the problem to its completion.	• Website down • Hardware failure • Login failure • Major software failure • System hanging up • Customer unable to complete an interaction with the Website or cannot complete an action within the customer workflow. • API Failure
P2 - High	(b) IFRAME/API is operational but a significant feature or function is not operating properly or is not operational and there is an immediate impact on Client's business. Severity Level 2 (P2) Incidents that cannot be resolved by Level 1 Support will be escalated to Supplier's Level 2 Support within two (2) hours. Support personnel will continuously work to resolve the problem(s) and will apprise Client, at Client's request, of progress toward a Resolution.	• Data upload failure (ie data out of date) • Secure messaging not operational • Slow response time • A dysfunctional Software function/feature
P3 – Medium/Low	(c) IFRAME/API is operational with problems or errors, which do not fall within the definition of Severity 1 or Severity 2 Incident. Severity 3 Incidents will be addressed and resolved in a future Update of the IFRAME/API.	• Intermittent slowness • General Software defects

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10. Incidents and Software Errors Severity Level - Supplier Definition

Severity Priority	Severity Definition	Service Level Metrics and Standards		
		Required Response Time/ Remedy	**Required Resolution Time/ Remedy**	**Required Action/Escalation**
Severity 1 (Total Outage)	An issue that has major widespread effect on all Supplier Clients and/or End Users. Example: complete inaccessibility or unavailability of the Customized Solution due to a major failure across multiple clients.	*Standard*: Immediate (i.e., less than 30 minutes). *Remedy*: 1 Credit: • if Response Time exceeds 30 minutes; and • for each 30 minute interval thereafter until a response is provided.	*Standard*: 4 hours for a Mitigation. *Remedy*: 1 Credits: • if Resolution Time for a Mitigation exceeds 4 hours; and • for each 1 hour interval thereafter until a Mitigation is provided. *Standard*: 48 hours for a fully tested permanent correction. *Remedy*: 1 Credits: • if Resolution Time for a permanent correction exceeds 48 hours; and • for each 24 hour interval thereafter until a permanent correction is provided.	Supplier will use all commercially reasonable efforts to resolve each problem as quickly as possible within 2 hours after Supplier learns of the problem, or within a shorter timeframe as the parties may otherwise agree. Supplier will provide qualified Supplier technical support and developer personnel, as needed, to work on the problem exclusively and continuously until it is corrected. If not resolved within 2 hours, Supplier's Chief Operating Officer will be paged and Supplier will further escalate its efforts to resolve the problem.
Severity 2 (Major Outage) **Maps to JPMC P1**	An Issue that has significant impact on JPMC and/or its End Users. Examples: complete inaccessibility or unavailability of the System or a key page or module therein A Severity 2 problem may be composed of a collection of problems that would otherwise individually constitute Severity 3 or Severity 6 problems, but which, taken as a whole, have	*Standard*: Immediate (i.e., less than 60 minutes) *Remedy*: 1 Credit: • if Response Time exceeds 60 minutes; and • for each 60-minute interval thereafter until a response is provided.	*Standard*: 24 hours for a Mitigation. *Remedy*: 1 Credits: • if Resolution Time for a Mitigation exceeds hours; and • for each 24-hour interval thereafter until a Mitigation is provided. *Standard*: 120 hours for a fully tested permanent correction. *Remedy*: 1 Credits: • if Resolution Time for a permanent correction exceeds 120 hours; and	Supplier will use all commercially reasonable efforts to resolve each problem as quickly as possible within 24 hours after Supplier learns of the problem, or within a shorter timeframe as the parties may otherwise agree. Supplier will provide qualified Supplier technical support and developer personnel, as needed, to work on the problem exclusively and continuously until it is corrected.

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	the effect of a Severity 2 problem.		• for each 24-hour interval thereafter until a permanent correction is provided.	If not resolved within 24 hours, Supplier's Chief Operating Officer will be paged and Supplier will further escalate its efforts to resolve the problem
Severity 3a (Major Impact) **Maps to JPMC P2**	An Issue that affects one of Supplier's products or services, multiple users; a single symbol's business critical content; Examples: multiple data points on multiple securities have discrepancies or multiple incorrectly calculated data points..intermittent/sporadic issues.	_Standard_: 24 hours. _Remedy_: 1 Credit: • if Response Time exceeds 24 hours; and • for each 8 hour interval thereafter until a response is provided.	_Standard_: 120 hours for a Mitigation. _Remedy_: 1 Credit: • if Resolution Time for a Mitigation exceeds 240 hours; and • for each 24 hour interval thereafter until a Mitigation is provided. _Standard_: A fully tested permanent correction as part of Supplier's next regularly scheduled release or update. _Remedy_: 1 Credit: • if a permanent correction is not provided with Supplier's next release or update; and • for each release or update thereafter until a permanent correction is provided.	Supplier will use all commercially reasonable efforts to resolve each Severity 3 problem within 51 days after Supplier learns of the problem, or within a shorter timeframe as the parties may otherwise agree. Supplier will provide qualified Supplier technical support and developer personnel, as needed, to work on the problem until it is corrected.
Severity 3b (Minor Impact) **Maps to JPMC P3**	Any minor service or data degradation or stale non-business critical data. Examples: multiple documents or multiple symbols impacted by same data point.	_Standard_: 2 business day. _Remedy_: 1 Credit: • if Response Time exceeds 2 business day2; and • for each 1 business day thereafter until a response is provided.	_Standard_: Supplier will provide JPMC with a permanent correction as part of Supplier's next regularly scheduled release or update or as otherwise mutually agreed by the parties. _Remedy_: 1 Credit if a permanent correction is not provided with Supplier's next regularly scheduled release or update or as mutually agreed by the parties.	
Severity 6 (Minor Issue or Inquiries)	An Issue has some impact on JPMC and/or End Users but has no material impact. Examples: a single data point has	_Standard_: 2 business day. _Remedy_: 1 Credit:	_Standard_: Supplier will provide JPMC with a permanent correction as part of Supplier's next regularly scheduled release	

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discrepancies; a question about a single data source or calculation of a data point.	• if Response Time exceeds 2 business day2; and • for each 1 business day thereafter until a response is provided.	or update or as otherwise mutually agreed by the parties. _Remedy_: 1 Credit if a permanent correction is not provided with Supplier's next regularly scheduled release or update or as mutually agreed by the parties.	

Note: Sev 4 and Sev 5 issues are reserved for internal Supplier issues.

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11. Software Update

Software updates shall be provided to Client no less frequently than monthly and will usually be weekly so as to accommodate the needs arising from the IFRAME/API Incidents Severity Definitions as described in Section 9.

   a) Supplier shall respond to Client's request for assistance so as to meet all of the Service Levels in the Response and Resolution Schedule above. The Incident(s) will be categorized by JPMC in accordance with the Severity definitions defined in Section 9. If Supplier disagrees with JPMC's severity categorization, then Supplier shall notify JPMC and the dispute will be resolved by management review at the earliest opportunity. Notwithstanding the foregoing, JPMC shall have final determination of severity categorization. Any objection made by Supplier shall not result in Supplier's obligation to meet the time requirements as set forth in the Section 5 above, however those requirements (and resulting penalties) may be adjusted once mutual resolution between the parties has occurred.

   b) Supplier shall communicate with the client the Root Cause Analysis and Resolution plan for Severity 1 and 2 Incidents and provide status on the Workaround and/or Resolution on daily basis or as mutually agreed via email or phone until issue is permanently fixed.

   c) Supplier shall document, test, and communicate with Client the process methodology prior to any update.

   d) Supplier shall notify the Client of upcoming software updates (and impacts of such planned update/release) as reasonably far in advance as practicable but no less than ten (10) Business Days from the planned date of release (unless notification otherwise inhibits Supplier from meeting its other SLA requirements).

   e) Supplier and Client shall discuss and mutually agree on any software update schedule that is significantly changing infrastructure, functionality or introduces new features.

   f) The implementation of all software updates will be as seamless as possible.

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12. COMPLIANCE AND QUALITY MONITORING

Supplier will make reasonable efforts to work within the SaaS compliance criteria and to provide evidence of the work as needed or requested to Client as follows:

a) Software development
  - Coding. Secure coding practices which includes secure coding guidelines, code reviews, and static analysis test results
  - Documentation and review of known product risks, issues and errors, plus a mitigation strategy where applicable
  - Results from dynamic testing to prove that countermeasures put in place mitigate any security risks identified through threat modeling and source code analysis
  - Complete release notes covering the details of the update/upgrade and software changes, including applet / data impacts and end user experience changes

b) Software testing
  - Usage of sufficient amounts of varied test data to perform testing and cover CLIENT requirements, including boundary conditions.
  - 100% execution of planned test cases and regression with at least a 95% pass rate
  - Review of test results with CLIENT and sign off on items, resolved, deferred or closed

c) Product data storage and security
  - Test results pertaining to the use of approved grade of encryption ciphers for sensitive data exchange
  - Security defect management process and all (relevant) security defects to Client including both open and resolved Change Requests
  - Test results to ensure data integrity as it pertains to proper synchronization of data between on-premise and SaaS-based systems
  - Demonstration of sufficient separation of CLIENT data and services from other customers. Data of each enterprise tenant should not be available for other clients throughout lifecycle of the data.
  - Sufficient industry grade encryption for data storage including salt/hashing for authentication related credentials
  - Data obfuscation (where applicable) in test environments to protect sensitive data and PII (Personally Identifiable Information)

d) Performance testing
  - Test results for response time and throughput across geographically dispersed hosting endpoints, or extrapolation thereof
  - Test results over public internet or private VPN line (off of public network) - where applicable
  - Simulate real world behavior by properly stressing all applicable tenants (in a multi-tenant environment) - Results must demonstrate that consistent performance and reliability is achieved across multi-tenant architecture
  - Test environments are physically and/or logically representative of production systems

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- Test results as it pertains to mutually agreed upon scalability requirements to ensure compliance with capacity planning

e) Monitoring
- Sufficient test results and data as it pertains to scripting, execution, diagnostics, monitoring, and reporting
- Confirmation and approach for synthetic transaction monitoring in production
- Test results for redundancy and failover, DR cut-over exercises and business continuity plan to ensure timely availability of services

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<p style="text-align:center">FEE EXHIBIT</p>

1.   INTRODUCTION.

This Exhibit sets forth the terms and conditions for the pricing and invoicing of fees and other amounts payable by JPMC to Supplier, and the crediting of certain amounts against such payments, pursuant to this Schedule.

In this Fee Exhibit, a fee payable for Services and Deliverables is payable for the Supplier correctly processing the applicable item(s), or otherwise delivering the applicable Services and Deliverables, in accordance with the terms of this Schedule, including the Service Levels set forth in the Service Levels Exhibit.

The fees payable with respect to ongoing Services in each month shall be calculated as the sum of:

ongoing Fees as set forth in Section 2 of this Fee Exhibit;
less any Performance Credits to which JPMC is entitled under the terms of the Service Levels Exhibit;
less any Deliverable Credits to which JPMC is entitled under the terms of this Schedule;
less all other applicable fee credits;
plus any Pass Through Expenses payable under Section 3 of this Fee Exhibit.

All pricing provided by Supplier under this Schedule shall be consistent with this Fee Exhibit, including volume-based discounts and hourly rates.

The fees set forth in this Fee Exhibit are intended in the aggregate to compensate Supplier for all costs incurred and resources used in providing the Services. Supplier acknowledges and agrees that, other than taxes due on the Services and Deliverables in accordance with the Master Agreement, JPMC shall pay no additional or separate charges for any Services or Deliverables, management, production, operational support and other services relating or incidental to the performance of the Services and delivery of the Deliverables.

Without limiting the paragraph above, the Services and Deliverables provided under this Schedule include the acquisition, provisioning, staging, configuring, installing, testing, operating, maintaining, upgrading, and enhancing the equipment and connectivity. All costs and expenses related to complying with this provision will be borne by Supplier and are included within the Ongoing Fees as described below.

2.   ONGOING FEES.

Ongoing Fees will be payable by JPMC from the date each respective Deliverable has been delivered, Accepted by JPMC and released into Supplier's production environment. Monthly Ongoing Fee will be prorated based on the day of the month each deliverable has been released.

	Deliverable	Estimated Date	Payment (per month)	Milestone Group
1	**Options Chain & Chain Quote**	Q1 2019	**Total fee: $3,600 per month**	1

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			Includes $3,060 for managed services, $540 for Enhancement Budget	
2	**Option Quote API**	Q1 2019	**Total fee: $8,100per month** Includes $6,885for managed services, $1,215for Enhancement Budget	1
3	**Watchlist**	Q2 2019	**Total fee: $9,000per month** Includes $7,650for managed services, $1,350for Enhancement Budget	1
4	**Charts**	Q2 2019	**Total fee: $7,200per month** Includes $6,120for managed services, $1,080for Enhancement Budget	2
5	**Stock Quote & Profile**	Q2 2019	**Total fee: $9,000per month** Includes $7,650for managed services, $1,350for Enhancement Budget	2
6	**Symbol Search API**	Q2 2019	**Total fee: $0,000 per month**	2
7	**Mutual Fund Quote & Profile**	QX 2019	**Total fee: $5,400per month** Includes $4,590for managed services, $810for Enhancement Budget	2
8	**ETF Quote & Profile**	QX 2019	**Total fee: $5,400per month** Includes $4,590for managed services, $810for Enhancement Budget	2
9	**Stock Quote & Profile – Extended Quotes & OTC Notification**	QX 2019	**Total fee: $900per month** Includes $765 for managed services, $135for Enhancement Budget	3
10	**Stock Top Holders**	QX 2019	**Total fee: $2,700per month** Includes $2,295for managed services, $405for Enhancement Budget	3
11	**Stock Fundamentals**	QX 2019	**Total fee: $4,500per month** Includes $3,825for managed services, $675for Enhancement Budget	3
12	**Stock Performance Comparison**	QX 2019	**Total fee: $3,600per month** Includes $3,060for managed services, $540for Enhancement Budget	3
13	**Stock Research**	QX 2019	**Total fee: $7,200 per month**	3

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			Includes $6,120for managed services, $1,080for Enhancement Budget	
14	**Stock ESG Research**	QX 2019	**Total fee: $5,400per month** Includes $4,590for managed services, $810for Enhancement Budget	3
15	**Stock News**	QX 2019	**Total fee: $7,200per month** Includes $6,120for managed services, $1,080for Enhancement Budget	3
16	**Mutual Fund Quote & Profile – Additional Detail**	QX 2019	**Total fee: $3,600per month** Includes $3,060for managed services, $540for Enhancement Budget	3
17	**ETF Quote & Profile – Additional Detail**	QX 2019	**Total fee: $3,600per month** Includes $3,060for managed services, $540for Enhancement Budget	3
18	**International Stock Quote**	QX 2019	**Total fee: $13,500 per month** Includes $11,475for managed services, $2,025for Enhancement Budget	3
19	**Market Overview**	QX 2019	**Total fee: $$9,000per month** Includes $7,650for managed services, $1,350for Enhancement Budget	4
20	**Market Calendar**	QX 2019	**Total fee: $5,400per month** Includes $4,590for managed services, $810for Enhancement Budget	4
21	**News & Events Experience**	QX 2019	**Total fee: $9,000per month** Includes $7,650for managed services, $1,350for Enhancement Budget	4
22	**Stock Research Overview**	QX 2019	**Total fee: $9,000per month** Includes $7,650for managed services, $1,350for Enhancement Budget	4

Supplier will work on the Deliverables in the order as set in the Milestone Group column of the table above. Supplier will start the work on each Milestone Group Deliverables when the Deliverables from the preceding Group are delivered and Accepted by JPMC.

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3.   **PASS THROUGH EXPENSES**.

The following are valid Pass Through Expenses:

Travel expenses as agreed between the parties. All Supplier travel, per diem, and stay costs that Supplier incurs, shall be incurred in accordance with JPMorgan Chase Supplier Travel Policy (a current copy of which is located at https://www.jpmorganchase.com/corporate/About-JPMC/ab-personnel-policies.htm or is otherwise available from JPMC upon request) and shall be subject to approval by JPMC in advance of incurring such expense.

Meals and Entertainment Expenses: JPMC and Supplier agree that if JPMC reimburses meal and/or entertainment costs incurred by Supplier, any Internal Revenue Code Section 274 limitation on deductibility of the costs will be the responsibility of Supplier not JPMC.

Third Party Content:
- Comtex Public Companies Select news licensing pass through fees: $1,000 per month