| **No.** | **High-level requirement** | **Mandatory Requirements (Taken from Annex 1)** | **Category** | **Sub weight** | **Candidate’s response** |
| --- | --- | --- | --- | --- | --- |
| 1 | P&L calculation | 1. The Software must calculate daily absolute and relative P&L for each portfolio and benchmark. 2. Users must be able to extract reports containing such data for various time periods and various groupings, at least for typology/maturity bucket/instrument level. 3. P&L calculation must be performed in base currency EUR. | FUNCTIONAL | 22% |  |
| 2 | P&L and return calculation | 1. The P&L and return calculation must include the impact from intraday transactions (P&L between trade price and end of day price). |  |
| 3 | Time Weighted Rate of Return calculation | 1. The Software must calculate daily absolute and relative Time Weighted Rate of Return (“TWRR”) for each portfolio and benchmark. 2. Users must be able to extract reports containing these data for various time periods and groupings at least for typology/maturity bucket/instrument level. 3. TWRR calculation must be performed in base currency EUR. |  |
| 4 | Cash P&L and Return calculation | 1. The Software must be able to calculate cash P&L and return, based on a custom rate provided by the user, changing over time, which can either be a fixed rate of return or linked to a market index (e.g. ESTR), plus a spread. 2. The cash balance amount must be uploaded by the user. |  |
| 5 | Price Sources | 1. The user must be able to upload custom prices per instrument position. 2. The user must be able to use, per instrument, different prices depending on the portfolio. |  |
| 6 | Price Sources | 1. The user must be able to autonomously and dynamically choose the Price Source for calculating portfolio and benchmark P&L and return for different typologies. |  |
| 7 | Fixed Income performance contribution and attribution | 1. The Software must be able to run on-screen and allow the extraction of performance attribution reports for various time periods and various groupings, at least for typology/maturity bucket/instrument level, including various attribution factors such as curve carry, curve change, spread carry, spread change, impact from transactions, etc. (more than one attribution factor must be reported on). |  |
| 8 | Fixed Income performance contribution and attribution | 1. The Software must provide a yield curve decomposition - duration based approach performance attribution fixed income model. |  |
| 9 | Portfolio analysis/reporting | 1. The Software must be able to run and extract reports for any required custom dates and time periods (i.e. daily, multiple days, multiple weeks, multiple years), with various groupings (at least maturity bucket/asset type/security type) and the Software must be able to create custom hierarchies of those groupings, including the following minimum standard metrics: Position amount, Market Values in local and foreign currency, Weights, Modified Duration (absolute and contribution), Yield to Maturity, ISIN , maturity date, Issuer Name, Country of Risk, Currency, Price, Price Source. 2. The Software must be able to exclude specific user- defined groups and recalculate accordingly the relevant quantitative metrics (duration, weights) after the exclusion. |  |
| 10 | Benchmark management | 1. The Software must be able to setup index-based benchmarks, also including cash, earning a custom return changing over time as defined by the user. |  |
| 11 | Instruments coverage | 1. All ESM asset types must be supported by the Software:    * Cash    * Bonds    * Cross currency swaps    * FX swaps (Spot+Forward)    * Interest rate swaps    * Overnight index swaps    * Bond futures    * Interest rate futures    * Certificates of deposit    * Commercial papers    * Deposits    * Repurchase agreements    * Inflation linked bonds    * Inflation swaps |  |
| 12 | Currencies coverage | 1. All ESM eligible currencies must be supported by the Software: AUD, CAD, CHF, DKK, EUR, GBP, JPY, NOK, SEK, USD. |  |
| 13 | Ad-hoc analysis capabilities | 1. Users must be able to create test portfolios on the fly and perform all mandatory requirements previously described on those test portfolios |  |
| 14 | Tracking error Analysis | 1. The Software must be able to calculate portfolio ex-ante Tracking error for a given date, with pre-defined observation frequency, and based on custom categorisation of the portfolio. 2. The Software must be able to calculate portfolio Tracking error for a given date, with a pre-defined observation frequency with simulated position changes and based on custom categorisation of the portfolio. |  |
| 15 | Stress Test & Scenario Analysis | 1. The Software must be able to execute a stress test using custom curve/spread change and determine its impact on the different applicable Benchmarks & Portfolios, in terms of absolute and relative return. |  |
| 16 | Portfolio Optimisation | 1. The Software must be able to perform optimisation subject to user-defined objective functions and user-defined constraints. |  |
| 17 | Software Integration | 1. The Software must interface with third party systems, to the extent that all files are required to be uploaded into the new system | TECHNICAL | 8% |  |
| 18 | Stable and Secure Interface | 1. Provide a robust and reliable interface for receiving data from the ESM via Secure File Transfer Protocol (SFTP) or ReSTful API |  |
| 19 | Stable and Secure Interface | 1. The interface must support encryption protocols for both data transmission (e.g. TLS, SSH) and storage of data, ensuring data confidentiality and integrity |  |
| 20 | Stable and Secure Interface | 1. The provider must comply with industry standards such as ISO 27001 or equivalent for information security management. |  |
| 21 | Error Handling and Resending | 1. Mechanisms must be in place to handle errors, including automatic retries and notifications in case of failed file transmissions. |  |
| 22 | Error Handling and Resending | 1. Provide support for resending files without manual intervention and ensure that the system can handle duplicate or missing file scenarios. |  |
| 23 | Audit trail | 1. Maintain a detailed and accessible audit trail for all file exchanges, including timestamps, file metadata, transmission status, and any associated errors or failures. The audit trail must be retained for a minimum of [*10 years*], as agreed in the Service Level Agreement (SLA). |  |
| 24 | Input File Format Support | 1. Support of input files in at least one of the following formats: Plain Text (.txt), JSON (.json), CSV (.csv), XML (.xml), or Excel (.xlsx). |  |
| 25 | Input File Format Support | 1. Future extensibility to additional formats must be possible, and backward compatibility must be maintained. |  |
| 26 | Encryption and Data Integrity | 1. Data at rest must be encrypted using AES-256 or equivalent encryption standards. |  |
| 27 | Test environment | 1. Provide a non-production test (UAT) environment with identical features to the production environment or demonstrate a viable alternative that supports testing, without disrupting the production environment |  |
| 28 | Test environment | 1. The test environment must run in parallel to the live environment for the entire duration of the contract, allowing seamless integration, user acceptance testing (UAT), and pre-production testing. |  |
| 29 | Scalability and Performance | 1. Scalability (increased file sizes and frequency of transfers) should be technically possible. |  |
| 30 | Scalability and Performance | 1. The system must handle peak loads without performance degradation or failures, processing files within defined SLAs |  |
| 31 | Data Retention and Recovery | 1. Define clear data retention policies, ensuring that received files are retained and accessible for a minimum period of *10 years*, in accordance with applicable data retention regulations |  |
| 32 | Data Retention and Recovery | 1. Provide mechanisms for disaster recovery and data restoration in case of interface failures and/or data corruption, with an RPO of up to *4 hours*. |  |
| 33 | Data Retention and Recovery | 1. Upon contract expiry or termination, ensure that all data is either returned to the ESM or securely deleted, in compliance with predefined data retention policies. |  |
| 34 | Compliance | 1. The provider must comply with applicable regulatory requirements such as GDPR, HIPAA, or other relevant data protection laws, ensuring all data is handled according to legal obligations |  |
| 35 | Compliance | 1. Comply with digital operations resilience standards, including capability, response and recovery from ICT-related incidents (e.g.DORA). |  |
| 36 | Compliance | 1. Ensure that the Service Provider personnel only access ESM data on a need-to-know basis for service delivery. Unauthorised data exposure is strictly prohibited |  |
| 37 | Data integration & handling | 1. Users must be able to upload historical data (holdings, transactions, prices, etc) at chosen frequencies (e.g. daily, YTD, and monthly for older periods). |  |
| 38 | Data integration & handling | 1. The Provider must allow users to define and integrate a wide range of metrics in custom data fields specific to their requirements. |  |
| 39 | Data integration & handling | 1. The Software must support both automatic daily uploads of required files and ad-hoc manual uploads (e.g. for testing purposes). |  |
| 40 | Data extraction & reporting | 1. The Software must allow users to extract reports and data in formats that are compatible with Microsoft Excel, such as .csv, .xls, .xlsx, .txt. |  |
| 41 | Data extraction & reporting | 1. The Software must allow users to extract reports and data in unstructured format (either JSON or CSV). |  |
| 42 | Data extraction & reporting | 1. The Software must support the extraction of reports, as well as the underlying data used to generate those reports. |  |
| 43 | Data extraction & reporting | 1. The extraction process must maintain the integrity of the data, ensuring that the information extracted is accurate, complete, and consistent with what is stored in the provider’s database and displayed on the front-end screen of the software. |  |
| 44 | Data extraction & reporting | 1. The reports and data must be a meaningful reflection of the analysis shown on the front-end screen, i.e., they must be provided in a structured and readable format to ensure an efficient usability of the extracted information. |  |
| 45 | Data extraction & reporting | 1. The data extraction process must be intuitive and user-friendly, allowing users to extract reports and data directly from within the Software. |  |
| 46 | Data extraction & reporting | 1. The extraction process must be efficient, delivering reports and data promptly. |  |
| 47 | Data extraction & reporting | 1. Comprehensive support must be offered to assist the user with any technical issues related to data extraction, including prompt resolution of problems that prevent timely extraction of reports and data, including providing detailed documentation and assistance to resolve any technical issues that may arise. |  |
| 48 | Data usage & rights | 1. The ESM must have the right to manipulate and utilise the extracted reports and data for its own purposes and business operations (including e.g. sharing the data with ESM shareholders, Board of Auditors, external consultants, use for auditing purposes) during the contract’s duration. |  |
| 49 | Data usage & rights | 1. Upon expiry or termination of the contract, the ESM retains the right to keep and use the extracted reports and data for internal purposes. |  |
| 50 | Data usage & rights | 1. Users can use the unstructured data output for further customisation using Python or other programming language. The extraction process must comply with all applicable data protection and privacy regulations, ensuring that sensitive information is handled and transferred securely. |  |
| 51 | Data usage & rights | 1. After extraction, the Service Provider must cooperate with the ESM to validate the completeness and accuracy of the data (provide technical support). |  |
| 52 | Data usage & rights | 1. Users must be allowed to share the data extracted from the tool both internally (within ESM), and with external stakeholders (e.g. ESM shareholders). |  |
| 53 | Users & access | 1. At least 15 users will be working with the tool, primarily ESM staff. However, the user base may change over time due to regular staff turnover and business needs. |  |
| 54 | Users & access | 1. The tool will be accessible both onsite, i.e. at the ESM office, and off-site, i.e. for remote work. |  |
| 55 | Users & access | 1. Users must be able to access the tool anytime, from anywhere and/or from multiple locations at the same time. |  |
| 56 | Users & access | 1. The tool may be accessed directly by users, or through server processes for use in automatic models and reports. |  |
| 57 | Users & access | 1. Provide 3 Admin user licence that meet the following requirements:  * Can create and manage portfolios and benchmarks. * Can upload/edit/delete/restore data/reports either manually or via automated template upload. * Configure the Attribution models’ settings, link price sources to the portfolios and can define any other settings. * Responsible for managing the list of read-only users. * Can customise roles and permissions to control access to various features and data within the tool. * Can perform analyses using existing data and models (e.g. run attributions for a specific portfolio at a given date, perform stress testing and scenario analysis). * Can extract data and create their own reports. |  |
| 58 | Users & access | 1. Provide 12 Standard user licences that meet the following requirements:  * Can view the data (e.g. portfolios’ constituents, prices) but cannot upload, edit, delete data or edit settings on Production portfolios. * Cannot modify settings on Production portfolios. * Can perform analyses using existing data and models (e.g. run attributions for a specific portfolio at a given date, perform stress testing and scenario analysis). * Can extract data and create their own reports but cannot edit or delete reports created by others. |  |
| 59 | Technical support | 1. Provides technical support through a helpdesk reachable via phone, email, or live chat from Monday to Friday 8:00-18:00 Luxembourg time, and for critical issues 24/7/365.   Loss of access to the tool, loss of data in the tool, and unavailability of some crucial functionalities, such as data upload or performance and attribution reports extraction are considered critical issues. | SERVICES | 2% |  |
| 60 | Ticketing system or an alternative solution for tracking issues | 1. Provide a ticketing system or an alternative solution for incident and request management, including support for priority-based escalation. 2. Clearly define incident response times (considering at least critical and non-critical issues) and resolution SLAs. |  |
| 61 | Regular update | 1. The tool must receive regular updates to improve functionality, security, and performance. These updates should be communicated in advance and scheduled to minimize disruption. |  |
| 62 | Dedicated account manager | 1. Provide a dedicated account manager to handle any escalations and provide personalised support. |  |
| 63 | Training | 1. Provide comprehensive initial training sessions for all users as per section 3.1.5. 2. Provide access to a library of training materials, FAQs, white papers and step-by-step guides and optionally video tutorials. These should be available during the Implementation and Testing stages, as needed. |  |
| 64 | Training -hoc | 1. Provide training sessions in case of personnel changes, etc. on request. |  |
| 65 | Training material | 1. Provide access to a library of training materials, FAQs, white papers and step-by-step guides and optionally video tutorials. |  |
| 66 | User manuals | 1. Provide detailed user manuals that cover all aspects of the tool’s functionality. |  |
| 67 | API Documentation | 1. Provide comprehensive API documentation for any integrations with other systems. |  |
| 68 | SLA | 1. Software availability (at least 95% uptime) during Luxembourg working hours, excluding planned maintenance or planned unavailability notified to the ESM at least 48 hours in advance. Possible downtime of the system / software for planned maintenance or planned unavailability should be as short as possible. |  |
| 69 | SLA | 1. Distance between data centres: at least 100 –200 km apart |  |
| 70 | SLA | 1. Data centres are ISO/IEC 270001 Certified or equivalent. Certificate available |  |
| 71 | SLA | 1. Automated Data Backup: at least 1 scheduled daily backup |  |
| 72 | SLA | 1. Automated Data Backup Replication: either real- time, or near real-time, or hourly |  |
| 73 | SLA | 1. Local and remote Data Backup retention: Local for 30 days. Remote for up to several years |  |
| 74 | SLA | 1. Recovery Time Objective (RTO): up to 5 hours |  |
| 75 | SLA | 1. Recovery Point Objective (RPO): up to 4 hours |  |
| 76 | SLA | 1. Incident management as specified in Clause 4.1 Incident management of the ToR, ongoing support and maintenance. |  |
| 77 | Implementation & parallel run | 1. Provide in this document a project timeline covering all necessary activities for the successful implementation, including a data migration plan, project milestones and deadlines for each phase of the implementation.   During negotiations, the project timeline may be adjusted upon agreement. Implementation will commence only upon mutual agreement of the timeline. | IMPLEMENTATION & PARALLEL RUN | 8% |  |
| 78 | Implementation & parallel run | 1. Allocate the required resources to support the implementation an parallel run, ensuring the project team has expertise in critical functionalities.   The required resources are:   * 1 expert/consultant in performance attribution, including Fixed Income, as well as cross currency and interest rate OTC derivatives with at least 3 years of relevant experience; * 1 expert/consultant in the tool implementation with at least 2 years of relevant experience; * 1 project manager with background in financial market tools with at least 3 years of experience. |  |
| 79 | Implementation & parallel run | 1. Provide all hardware and software prerequisites to support optimal performance, including requirements for servers, databases, and network infrastructure, including any hardware, if applicable. |  |
| 80 | Implementation & parallel run | 1. Configure the system according to the specifications, including setting up user roles, permissions, and access controls. |  |
| 81 | Implementation & parallel run | 1. Provide all templates for all files that will need to be created and uploaded to the tool to use it, in line with the ESM’s requirements described in the Terms of Reference. |  |
| 82 | Implementation & parallel run | 1. Map data to the new system, if applicable. |  |
| 83 | Implementation & parallel run | 1. Conduct testing to verify system functionality based on ESM testing scenarios. |  |
| 84 | Implementation & parallel run | 1. Engage end-users in UAT to validate that the system meets the requirements. |  |
| 85 | Implementation & parallel run | 1. Create a comprehensive training schedule for all users, including hands-on sessions and training materials focused on mandatory functionalities. |  |
| 86 | Implementation & parallel run | 1. Prepare a detailed go-live checklist to ensure all requirements and system’s configurations are completed before the system goes live, i.e. at the end of the Implementation stage. |  |
| 87 | Implementation & parallel run | 1. Conduct a dry run to simulate the go-live process**,** identify any potential issues, and adjust as necessary to avoid disruptions. |  |
| 88 | Implementation & parallel run | 1. Establish a dedicated support team to assist users during the initial phase after go-live. |  |
| 89 | Implementation & parallel run | 1. Continuously monitor system performance and user feedback, making necessary adjustments and improvements, if needed. |  |
| 90 | Implementation & parallel run | 1. Provide clear and concise documentation describing the different capabilities of the tool. |  |
| 91 | Implementation & parallel run | 1. Provide clear and concise documentation describing the different performance attribution models available, including but not limited to Fixed Income Portfolios. |  |
| 92 | Implementation & parallel run | 1. Collaborate closely with the ESM Project Manager and all relevant internal/external parties, to address any emerging challenges and ensure a smooth implementation process. |  |
| 93 | Data integration & handling | 1. The Provider must supply templates and field guides for each file that will have to be uploaded to the system, covering holdings, transactions, prices, terms and conditions for typologies in scope, as applicable. These templates must be readily available before the start of the implementation. Templates should have a comprehensive list of fields to process ESM’s data needs, however some adjustments to fully cover the implementation requirements are acceptable.   Candidates must detail in this document which data is required for different instruments and which data is already available in the tool (e.g.: static data like coupon payments, maturities, risk data such as duration, etc).   1. The Candidates should detail what is the process and which source is used for static data available in the tool (for exchange traded instruments). |  |
| 94 | Software integration | 1. The Service Provider must provide clear data specifications, i.e. comprehensive documentation detailing at least the integration processes, supported data formats, standard protocols, as well as ongoing support for integration-related issues, including troubleshooting and updates. |  |