**RFP - MAP Analytics Platform (MAP)**

1. **RFP Background**

The primary objective of building a Model Analytics Platform (MAP) is to take the modelling analytics infrastructure in a strategic direction and help replace the current set of fragmented solutions into an integrated and consolidated technology supported solution. The new infrastructure will:

* enable seamless integration of the modelling platform to the Analytics Data Store
* enable modellers and validators to perform any post processing of data as part of the modelling exercise
* provide modellers and validators with the option to code and collaborate in multiple programming languages
* provide a computing and storage environment that is scalable, efficient and cloud-compliant/future proof
* improve model implementation and monitoring activities
* integrate modelling activities on MAP with the Model Life cycle workflows (GAME) solution.

The MAP platform should be built in line with the best industry practices adopted by our peer banks, take the bank’s tech stack towards state-of-the-art data science capabilities and help the bank get a strategic advantage in the modelling space.

1. **RFP Scope**

The RFP will focus on:

* Design, Integration and Productionisation of the strategic MAP infrastructure that meets the requirements specified below enabling modellers and validators to benefit from the latest open source technologies
* Enable access to both current SAS based infrastructure & strategic analytics platform in a seamless manner

The focus of the initial build of MAP will be to enable transition of Credit Risk IRB & Scorecards Model families for CIC & Retail from the current infrastructure to the strategic infrastructure.

**CIC:**

|  |  |
| --- | --- |
| IRB | PD, LGD, EAD |
| IFRS9 | PD, LGD, EAD |
| Stress Testing | PD, LGD, EAD |
| Others | ECMS-S&P mapping, CG 12 analysis |

**Retail:**

|  |  |
| --- | --- |
| Scorecard | Application, Behavioural, Collection, Early Fraud etc. |
| IRB | PD, LGD, EAD |
| IFRS9 | PD, LGD, EAD |
| Stress Testing | PD, LGD, EAD |

1. **RFP Requirements**
2. RFP should cover the following core requirements as part of the design and functionalities of the proposed Model Analytics Platform

| **Module** | **ID** | **Description** |
| --- | --- | --- |
| Feature Engineering | 001 | I can guide the system by dragging & dropping the raw data sets so that model-ready data sets can be prepared automatically after doing variable transformation, distribution, new variable creation etc. |
| 002 | I can see the explanation of those variable selections /elimination in model-ready data set |
| 003 | I can get the data transformation documentation generated |
| 004 | I want to visualize the data transformation |
| Modelling/Validation | 005 | I want a scalable infrastructure which can flexibly provide sufficient memory, storage, and optimum/efficient grid compute performance for all models, with fast/localised access to all data warehouses/ data lakes, so that there is never a need to download to local environment |
| 006 | I can use development languages such as Python, R, SAS along with pre-compiled (“image”) code libraries or frameworks (e.g. R packages) |
| 007 | I can see full audit trail of code versions and branches stored in a central repository to house all model development source code with check-in/out functionality |
| 008 | I need support bundling technical artefacts of the development, testing and validation processes (e.g. code, data, comments and issues) together for downstream or future consumption |
| 009 | I can link the model Lifecyle stages in the workflow tool (GAME) to the corresponding pieces of work on theplatform |
| 010 | I can collaborate artefacts of development and testing with validators in secured and streamlined manner |
| 011 | I can access previous code/data used for model development in case of a re development of a model |
| 012 | I can collaborate across multiple developers/validators at the same time during modelling activities |
| 013 | I can access other models variables created which are stored in a central repository |
| 014 | I can access versions of model code/compiled objects per my access rights in an authorization matrix |
| 015 | I want capability to build simple ad-hoc dashboards for analytics and visualization e.g. I can do impact assessment of RWA, ECL for my model and run a what if (e.g. sensitivity) analysis etc. |
| 016 | I want the same system performance while accessing the platform irrespective of my location or my means of access (VPN, VDI etc.) |
| 017 | I can access standard library of model validation methods and performance metrics (AR etc.) |
|  | 018 | I can search through the modelling code to identify/refactor data field/functions used |
|  | 019 | I can perform segmentation, time series & non-linear modelling using appropriate tool set |
|  | 020 | I can monitor resource utilization (CPU load, allocated/utilized RAM, IOPS, Network, etc.) of provided infrastructure in real time and look up historical time series graphs. |
|  | 021 | I can inspect datasets (data lake/ data warehouse/ intermediate/ model outputs) using intuitive data introspection tools and perform simple data load/dump in this tool |
|  | 022 | I can visually build step-wise pipelines (Directed Acyclic Graphs) of data transformations |
|  | 023 | I can script/enable notifications during development |
|  | 024 | I can track data lineage and model experiments |
| Implementation | 025 | I want an implementation package to be generated which can be handed over to T&I so that it can be done with minimal IT intervention and infrastructure |
| 026 | I want capability to execute in-country system model implementation in a similar way to group system model implementation |
| 027 | I want the ability to run multiple versions of a model at point in time in case there is difference in regulatory approval time lines e.g. Sometimes PRA approved model is not approved by local regulators; as a result for local reporting purposes we need to run previous versions of model as well |
| 028 | I want to run the final approved code in a Model as a Service (“MaaS”) mode |
| Monitoring | 029 | I want to monitor the model performance leveraging the validated & final version of code maintained in a central repository and run it seamlessly using the latest performance period |
| 030 | I can access libraries of model monitoring testing methods |
| 031 | I can slice the model performance results by any dimension of interest (e.g. booking/domicile country, business segment, size, etc.) |
| 032 | I want to integrate and access previous model lifecycle stages data |
| 033 | I want to be able to automate the production of model performance reports and recalibration jobs |
| Security/Audit | 034 | The solution must enforce granular user access controls to versions of model code per my access rights in an authorization matrix |
| 035 | I want model usage logging so that we can track what models/versions run where and link it back to Model Life cycle management tool (GAME) |
| End User Interfaces (Scenario analysis) | 036 | I can understand how changing the model inputs will affect the outputs |
| 037 | I can readily compute what-if outcomes for stress-testing or determine the risk profile of a hypothetical client via a centralised system |
| 038 | I can see historical outcomes and impact and any kind of information across time (stress output submitted to PRA/audit etc). |
| Non-Functional | 039 | I want 150 modelers to use the platform concurrently, it should be scalable to satisfy future need in case of scaling up of user demand |
| 040 | I want the capability of the platform so that it’s horizontally scalable to address performance demands of models |
| 041 | I want to store data set generated during modeling activity up to 200 GB |
| 042 | I want model sessions to be to auto saved in case I lose my network connection |

1. RFP proposal should essentially be a one stop shop whereby modelers/validators can access the current SAS infrastructure for the current SAS driven processes as well access the strategic infrastructure enabling coding on open source technology
2. RFP should demonstrate in sufficient detail how a Credit Risk PD Model (Preferably Retail Credit Card ) can be built on the proposed MAP solution highlighting how the core requirements mentioned above in Section A would be met.
3. RFP should cover the technology specific requirements as attached below.



1. **Penalties – 10% of total project cost if suppliers fail to deliver any of the 4 identified project milestones.**
2. **Commercials:**
   1. FIXED PRICE project - Please quote TOTAL project cost in SGD and **INR** (2 options)
   2. Suppliers to quote best commercial option for the delivery of RFP Scope – India (in INR) or SG (in SGD) delivery. Cost split between onshore and offshore components; delivery location preference (cost arbitrage) is Singapore and Bangalore.
   3. **For TCO field in Pacific Bankuy / ARIBA please input TOTAL project cost in INR**
   4. Costs broken down into modular and granular components so that it is possible to consider finalising a contract on selected components (preferable cost split for 4 milestones).
   5. As part of this FIXED PRICE delivery, we need below resources to work from Pacific Bank offices in SG and Bangalore. Please include this in the total cost of the project in pt 1 above.

Singapore Location

1 Project Manager

1 Solution Architect

1 Technical/ Integration lead

1 Senior Developer

1 Test Lead

1 Tester

Bangalore location

1 Technical/ Integration lead

2 Testers

2 Developers

1 Senior Developer

* 1. As part of **Post production support and enhancement sprints (4 months – refer Milestones Gantt)**, we expect few of above resources to continue working alongside Pacific Bank project teams. Suppliers to factor this component in the total fixed price quoted for this project.
  2. Payment Terms – delivery milestone based

Milestone 1 30%

Milestone 2 20%

Milestone 3 20%

Milestone 4 20%

End of Post production

support period 10%

1. **Detail RFP Plan / Milestones**

