

# Model Risk Management



### WE ARE A LEADING PROVIDER OF SOFTWARE SOLUTIONS AND CONSULTING SERVICES IN THE RISK, WEALTH AND ASSET MANAGEMENT SPACE

Prometeia is a global firm of quantitative experts and software engineers, dedicated to applying financial modelling, economic research and data science to solve complex business and regulatory challenges. Founded in 1974 as an independent institute for economic research by a group of young university professors, for half a century Prometeia has been developing innovative software solutions, studies, and reports for banking and insurance groups, institutional investors and public organizations. Our mission is to combine academic excellence with industry experience, integrating macro-economic research, quantitative analysis, business consulting and software development. This distinctive mix of competences has made Prometeia a leading European company in risk, asset and wealth management solutions. Prometeia's technology and specialized advisory are chosen by 300 customers in over 20 countries around the world.

OUR COMBINATION OF RISKTECH PROPOSITION, QUANTITATIVE ADVISORY, AND FINANCIAL AND ECONOMIC RESEARCH MAKES OUR BUSINESS MODEL UNPARALLELED IN TODAY'S MARKET

Prometeia's approach to Enterprise Risk Management is based on the development of quantitative models and advanced analytics. The design of highly specialized software solutions combines cutting-edge technologies and data science techniques with the knowledge of our subject matter experts and our ability to successfully respond to the growing demands of international regulation. Our deep understanding of financial markets, derived from proprietary economic research, adds a unique element to Prometeia's business model and value proposition.

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### OUR FLAGSHIP MODEL MANAGEMENT SUITE

Models are a strategic component into the decision-making process. It is crucial to manage their entire lifecycle (from design to final implementation) to reach the target standards in performance and reliability. Model Risk Management (MRM) is a comprehensive framework where all the steps in the model's lifecycle are properly defined, allocated to specific owners, monitored, documented, and traced for future regulatory checks.

Risk Management practitioners are aware that MRM implies a relevant complexity due to:

Proliferation of models (regulatory and managerial)	Proliferation of stakeholders with different prerogatives involved in different tasks (design, development, approval, implementation, validation, monitoring, model change, dismissal)
Models running in parallel at	Regulatory push towards a Model
different stages of their lifecycle,	Management Framework to minimize
requiring different actions with cross	model risk and to reduce capital add-ons
connections among them	and Margins of Conservatism (MOC)

For example, dozens of models in the credit risk space should be included in the MRM framework:

PD models split by segment/product, both acceptance and behavioral

LGD models split by segment/ product, both performing and in default

EAD models split by segment/product

Managerial models as Delegation of power, Early warning, Pricing split by risk segment

Accounting: IFRS9 calibrations, satellite models, transition matrices

The example can be easily extended to the other risks, dramatically increasing the number of models to be included in the perimeter. Of course, the MRM framework is not only a matter of methodology but includes organization infrastructure, policies and procedures, process design, and IT infrastructure. In our approach, a sound MRM framework must be supported by a specialized software solution that implements a comprehensive set of scalable and modular features.

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## Model Management modules

### WHY PROMETEIA

Engineered solution coherent to regulatory requirements

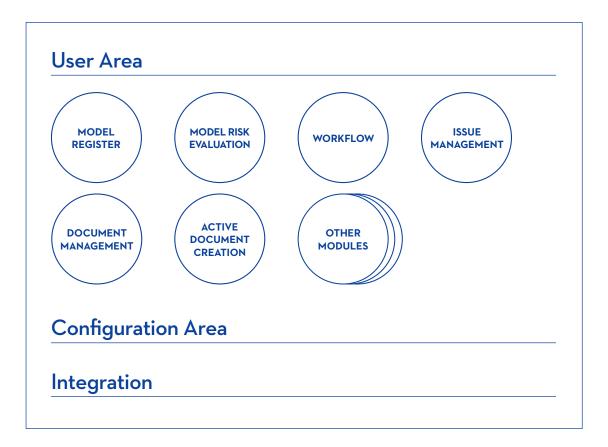
Turnkey project

Unique methodological track record

Part of a more comprehensive and scalable platform for model implementation/ validation

End to end support (from design to implementation)

Scale in the updating of future regulatory requirements





## User Area

Model Register is the module where the model's information is collected and visualized in order to provide each user the relevant set of information to keep track of the model's evolutions and potential areas of intervention. The information is structured according to the user's profile. Users are organized in roles with different prerogatives in the interaction with the system.



#### The Model Register's main features are:

Models Inventory to collect and publish all model's attributes as status, development date, modifications log, current phase in the model lifecycle, data sources, logical/physical data model

The association among model and users is allocated the different level of responsibilities Users profiling for the implementation of roles, prerogatives, access rights, connections with other users

Model Map for the association among models to establish the connections and to identify in case of modification in one model, which are the other models that are affected

The list of controls executed and related open issues and remedy actions



#### Models are listed and organized by priority

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	LGO_RRE		Loss Given Default RRE		V1	Model Creation - InProgress	Pillor 1 Models

#### Models details are collected according to the model type

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#### Models are properly mapped including the models' connections

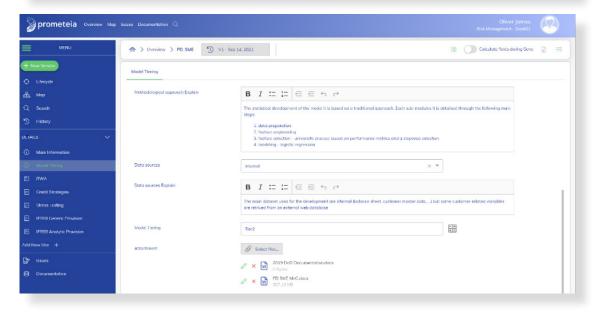


This module allows institutions to implement internal model risk calculation based on quantitative and qualitative data. Possibility to perform validation checks and see validation results, calculate model Tiering, Model Management Index and model Residual Risk.



## It is possible to set-up qualitative questionnaires, calculate scorecards and assign specific scores to questions and/or checks

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The workflow is the module that implements the set of activities to be executed on the model according to its position in the lifecycle path and its current performance.



The module is designed to:

Define the appropriate processes via a set of steps to be executed in the sequence per each model

Define the expected timeline in the process execution including the support of a scheduler, reminders, alerts, task notifications Define the actions to be taken in each step according to the information collected and the controls outputs/severity

Monitor the process' progress (status and owners) and activate overrides and exceptions

#### 

#### The steps are defined and the progress is monitored



#### Activities are designed via drag and drop interface

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Issue and findings module allows the users to manage any kind of activity that can be generic or connected to specific items/models.



#### Option to indicate and visualize:

History and track of modifications

Priority

Due date

Status

Assignee

Resolution status and date

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The Document Management feature is designed to collect and manage external documents in any format (documents upload/download and tagging) that can be linked to the single model or cross models. The documents can be stored in a general container (as general documentation) or linked to the specific items, and the user can keep track of the version uploaded.



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Create via user friendly interface, directly connected to the application, MS Word templates that will be automatically filled by the system (such as model reports, tables, etc.).



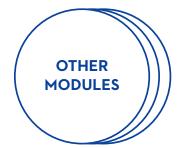
Users can indicate the fields to be retrieved in the document by simply clicking without the need of writing any code (that is written automatically)

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#### The Dashboard implements reports on:





E-mail notifications inform the users during the process of any changes or issues to the models, as well as informing on the coming due date of the model lifecycle's phases.



#### The application manages:

Integration with internal/external data sources

Data quality/manipulation/storing

Replicability

Warning in data quality (missing fields, inconsistencies, etc.)

#### Collection and the tagging of annexed documents

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## **Configuration Area**

Configuration is the area where the super user, i.e. administrator and/or advanced users, can set all the main configuration related to User area; platform provides with easy and integrated tools design and the level of structuring of the solution adapts to the organizational context, to the number and variety of models involved. No-Code solution to quickly intercept further change needs.

#### The Configuration Area's main features are:

## **Template Configuration** area is designed to:

- Fully customize the inventory via drag-and-drop tools that enable to develop template structure quickly without coding;
- Configure thresholds for status definitions, KPIs, and metric scorecards;
- Update Management feature.

#### Roles and legal entities area

is designed to:

- Define a multi-dimensional structure to support groups vs. stand-alone institutions;
- Setting roles, grants and visibility to share working area information within the same office or in other departments.

### Workflow Configuration area is designed to:

 Fully customize the workflow for each template structure via drag-and-drop tools that enable to develop workflow and phases structure quickly without coding.

#### Settings:

- E-mail Settings: E-mail notifications allow to inform users during the process of any changes or issues to the models, as well as informing on the coming due date of the model lifecycle's phases;
- Language Settings: Multi-language settings.

Audit Tools: allow the user to export by easily filter tracking of data changes.



## Integration

The platform is able to integrate with other systems, engage with data from different sources and integrate with third-party systems.

The main features are:

Access: Build-in Form Base Authentication. Integration with Windows Active Directory, Azure Active Directory, SAML2, legacy identity provider;

#### Export data:

- Simplified Data Export by CSV of register area, workflow process information and issues;
- Integration with third-party software for external reporting tools;

**Integration** with laboratory environment and validation controls;

API's & Connectors to integrate with other systems

**DMS**: Connection with third-party document management system;

Add-in: MS Document automation with MS Word add-in.



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