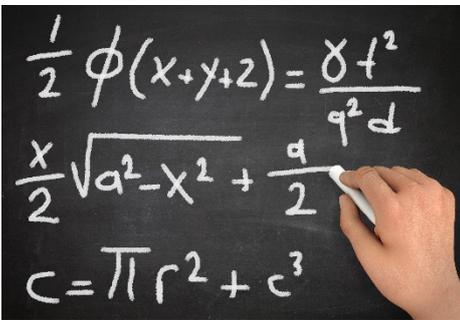


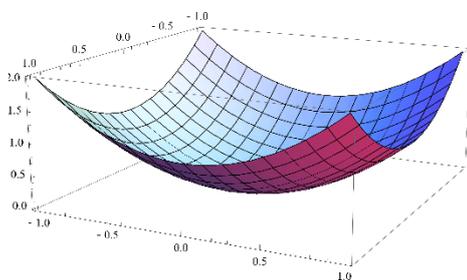
# Models Register



Firms use many different types of models for many different purposes every day in their normal business activity. Models to calculate margins and, based on the margin, prices. Models to calculate profitability over time and to forecast future cashflows and profitability. Models to estimate risk, whether credit risk, market risk or operational risk. Models to revalue illiquid portfolios based on some derived market value. Models to optimise investment portfolios based on expected market conditions. Some are simply models, some are extremely complex. Some models run on handheld devices, such as a calculator, some are embedded in major computer applications, others are developed in spreadsheets.

With so many different models used by some many different functions, it is extremely difficult to know what the total universe of models within any large firm actually is, never mind to try and control the use, deployment or versions of the models. This then raises concerns over so-called "model risk", which can be described as inappropriate use of models, using models for the wrong purpose, manipulating inputs into models, errors in models or intellectual property infringements.

Concerns around models have lead many internal audit functions and, in some cases, external auditors as well, to start to focus on the existence, governance and use of models in the business during their audit activities. Increasingly, audit functions are developing model specialists who undertake detailed reviews and audits of models within the business during the normal audit process or as part of specialised deep-dive audits. Similarly, the regulatory community are concerned about models and, in some jurisdictions, regulations have been established governing the levels of information which the firm needs to maintain on its models and, in some cases, specific requirements for certain types of models, such as capital estimation models, to be submitted to the regulatory for review and approval prior to be taken into production use.



Different firms have also adopted different approaches to the management of models, with some having discrete modelling teams to whom requests for any new model or amendment to an existing model are directed, while others deploy model development specialists, often in conjunction with a modelling specialist, alongside the business people who will be the end users of the model, allowing the models to be developed in a prototyping and iterative manner. Others have introduced independent model validation teams, which while they may be consulted during the model design process, are independent of both the model development team and the end business user and who are required by management to review and approve a model for use before it is taken into production.

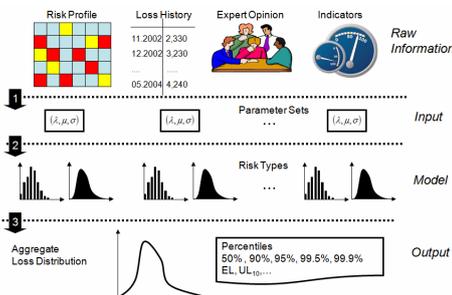
Although spreadsheets are easy to use to build simplistic models, security concerns tend to make many firms prefer the use of commercial modelling engines or models built into specific applications.



The RiskBusiness Models Register can be used as a standalone service or as an integrated component of the RiskBusiness RiskIntelliSet™. When used in conjunction with the RiskBusiness Taxonomy Service, the firm can define various hierarchical model classification structures, for example, model platform types, model types (based on purpose), or modelling applications, then employ these classification structures within the Models Register. The option is also available to create an inventory of different systems and applications used by the firm, so that where a model is incorporated into such a system or application or is interfaced with such a system or application, the complete picture can be defined within the Models Register.

The Models Register facilitates an entry for each model, accompanied by a model name, description of the model and a nominated model owner. Options are provided to indicate when last the model was reviewed and by whom, as well as when the model should next be reviewed, with the same options for model validation. Details on model usage, regulatory approval requirements, facility to store model documentation and version control over models is provided. An optional model rating mechanism is provided, whereby the criticality of the model can be rated and from which review requirement can be linked. Development or corrective action plans can be established around the model, while attestations on model testing can also be included. Actual model testing can be scheduled, with details of the model test and test results recorded as evidence.

If the firm also uses the RiskBusiness Outsourcing Management Service, the various vendors who provide commercial models to the firm can be defined and, if applicable, any relevant service level agreements defined, with ongoing service level breach management. The specific vendor who supports any model can then be associated with that model within the Models Register. Initial and ongoing due diligence can also be undertaken against each model vendor and a vendor risk rating incorporated into the Models Register.



Where future review dates are set and the specific reviewer(s) identified, based on pre-defined lead times, the reviewer(s) will be notified by email of the forthcoming review, with an entry inserted into that individual's Calendar within the RiskIntelliSet™ against the defined review date. Similarly, if a model is subject to regulatory approval and that approval has to be renewed periodically, the option is available to define the next regulatory review for each such model, which will then generate a notification to the responsible model owner ahead of the regulatory review date warning them of the need for such a review to take place.

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