RiskAgility Financial Modeler

Powerful financial modeling for life and composite insurers

RiskAgility
Financial Modeler

RiskAgility Financial Modeler (RiskAgility FM) is a flexible software solution that enables life insurers to run financial models that accurately reflect their company's products in ways that are easily adapted to their business processes.

RiskAgility FM blends the power of commercial programming tools with the actuarial expertise of WTW to deliver enhanced performance and ease of use. The open modeling environment supports accurate calculations and tight reconciliations today and into the future, as product designs, company practices and regulatory requirements evolve. In RiskAgility FM, we have designed modeling functions so that you can easily adapt the system to your way of doing things, rather than having to conform to rigid software requirements.

We offer global templates and a number of specific applications and regional templates for RiskAgility FM to give you a quick start in modeling product types common in various markets (see box for example). These applications are fully built out with extensive functionality. Use them as is, or tailor them to reflect your company's distinctive product designs and business practices.

RiskAgility FM: C-ALM

The Central Asset/Liability Management (C-ALM) suite provides a well-structured asset/liability framework for implementing dynamic stochastic projections for profit-sharing business, including monitoring and managing both book and market values of assets. Versions are available for French, German and Italian markets, along with a generic version for other territories within and beyond Europe. These applications provide fully featured modeling templates that enable you to quantify and measure value, economic capital, risk and earnings, and to meet new regulatory demands, such as Solvency II and IFRS 17.

Why RiskAgility FM?

- Enables your company to deploy sophisticated analytical calculations based on realistic economic principles, thereby improving risk and capital management

- Uses open, transparent applications to help you confidently understand exactly how the calculations model your business

- Delivers the power and accessibility of standard programming languages to model anything, augmented with domain specific features to assist actuaries

- Provides optional integration with Version Control platforms to deliver true collaborative development

- Easily adapts to your products and business processes to increase productivity

- Includes powerful input management tools to link variables to any external sources, including Excel spreadsheets, text files or databases

- Offers the ability to organize variables into user-defined groups that allow assumptions and projections to be managed easily

- Enables easy set up and management of multiple projections by mixing and matching different groups of inputs, run parameters and output parameters

- Provides flexible organization and orchestration of projections, allowing for dependencies between the projections

- Can be deployed on desktops, servers, clouds or hosted by WTW

- Supports powerful distributed processing in-house with Microsoft Windows HPC, in the cloud or with WTW vGrid — our Software as a Service scalable virtual grid solution designed specifically for use with RiskAgility FM

- Embodies the thought leadership and expertise of WTW

You can use RiskAgility FM for a variety of purposes including:

- Product development
- Liability modeling
- Asset/liability management
- Regulatory capital (e.g. Solvency II)
- Market consistent/traditional embedded value
- Pricing of options and guarantees
- Economic capital calculation
- Financial reporting (e.g. IFRS 17/GAAP)
- Reinsurance optimization

Separation of modeling functions makes the system easy to use, understand and learn
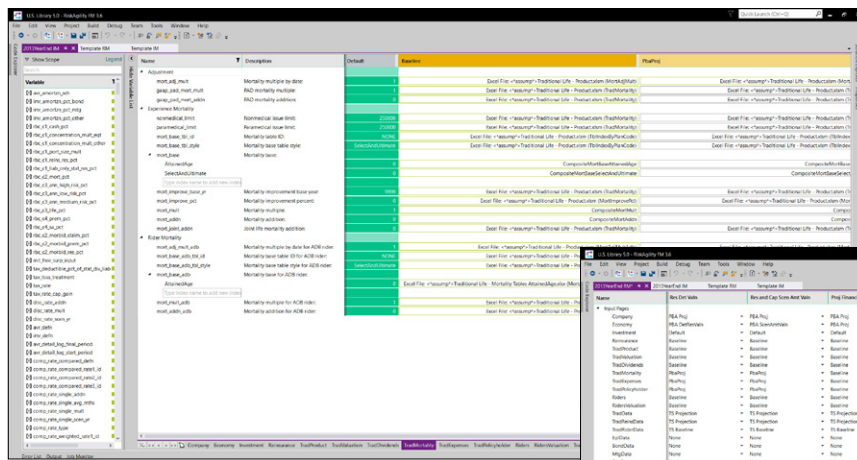
In RiskAgility FM, we have separated the modeling functions into logical groups. Modelers create reusable objects within these functions that are then available throughout the system. This makes it easy to create a modeling process that works well across your business environment and to integrate it with workflow management processes.

For example, a modeler can use sensitivity assumptions defined in the Input Manager (*Figure 1*) to create a series of waterfall projections or stress tests in the Run Manager with a few clicks of the mouse.

This separation and grouping of tasks helps you adapt the system to your company's business practices, which makes everyone's job easier, reduces the learning curve, and improves model governance and control.

The Output Manager in RiskAgility FM allows users to define the format of the output, with users having full control over the fields and time periods accumulated and reported. Standard output is in accessible text-file format to avoid unnecessary file conversion steps and you can also produce custom file formats to meet other needs. You can perform reporting using an Excel add-in.

Modeling functions are organized into groups to easily adapt the system to your company's business practices.

Code Manager

Input Manager

Run Manager

Output Manager
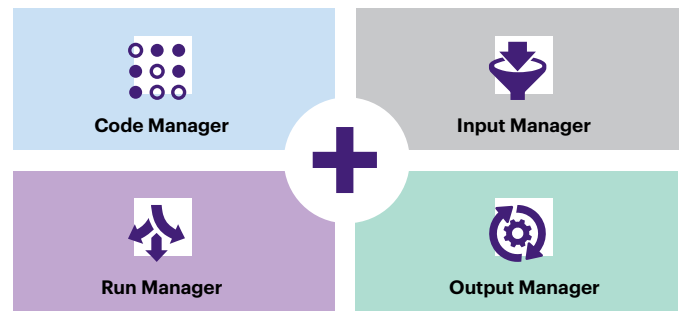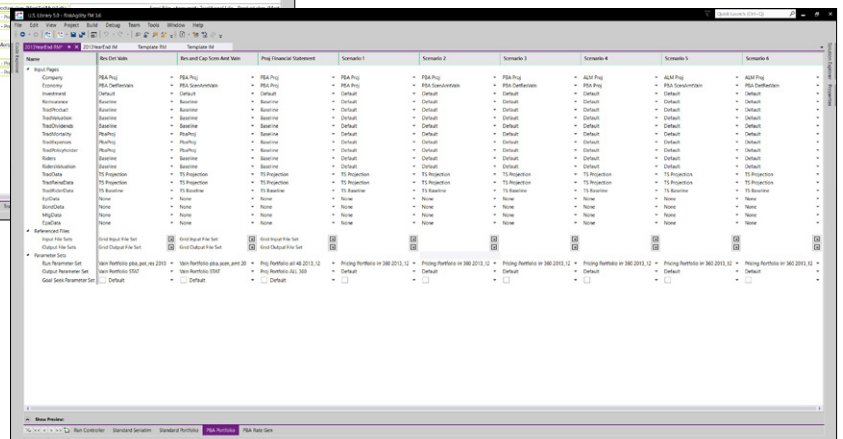
Figure 1: **Input management**

Figure 2: **Run management**

Your business. Your models. Your way.

RiskAgility FM simplifies modeling dynamic and embedded projections to build complex ALM and capital projections from basic reusable components.

RiskAgility FM delivers powerful advanced capabilities for building reusable modeling components delivering improved ease of use and productivity, with a modern look and feel.

Models use a combination of C++ code (widely known, enabling auto-complete, syntax guidance and debugging), actuarial modeling objects and links to your own functions and existing libraries.

Together these allow modular development and testing, as well as the ability to step through the code and trace calculations with the visual Dependency Viewer, which makes everyone's job easier, reduces the learning curve, and improves model governance and control.

Full projected balance sheet capabilities are available in the Standard Edition.

RiskAgility FM editions

RiskAgility FM is available in Foundation, Standard and Team editions. All editions run any RiskAgility FM model and offer all of the functionality described above. The RiskAgility FM Team edition includes increasingly sophisticated version control, audit, security and governance functionality on top of that provided by the Standard edition. These editions allow you to manage and control models, projections and results across your company.

Efficient, collaborative development

RiskAgility FM Team edition enables insurers to achieve efficient development and manage multiple versions of their models in a collaborative multi-user environment.

The Team edition builds on the Standard edition and works closely with features of Microsoft Team Foundation Server (TFS), or Microsoft Git to deliver a multi-user collaborative environment that enables your company to track, manage and control the development of your models. With the Team edition, your company can:

- Manage versions of models over time for improved backup, documentation and audit capabilities
- Control user access to models or parts of models for improved governance and security
- Coordinate changes to models among multiple users for improved quality and efficiency of model development efforts

Many modeling teams know what they need to do, but technology constrains them to having model owners working late in the evenings merging code across multiple model versions, often with alternative implementations of the same routines where multiple modelers have simply got in each other's way. Team edition of Risk Agility FM changes that, allowing optimal allocation and collation of the work of your modeling team.

A well-managed model development team can now efficiently deliver consistent and well-integrated code and will ensure those using the models can reliably pick up exactly what they need whether using the latest projects, or accessing old models to reproduce historic calculations.

Manage versions

RiskAgility FM Team edition helps users maintain a complete history of model versions. Want to see the model version that was used to support the last year-end processing? Team edition features make it easy to store and retrieve versions for improved audit readiness.

Control user access

Model governance is stronger when user access to production models is kept under control. The Team edition makes this easy, by working with TFS to control access to each model, or portions of models, by user or role.

Coordinate changes

RiskAgility FM Team edition makes it easy for your modelers to coordinate their efforts smoothly and efficiently, with high quality afforded by clear ownership of portions of the work and easy-to-use features to compare and merge versions (*Figure 3*). These features help your team fully realize the benefits of specialization and collaboration in creating and maintaining your models.

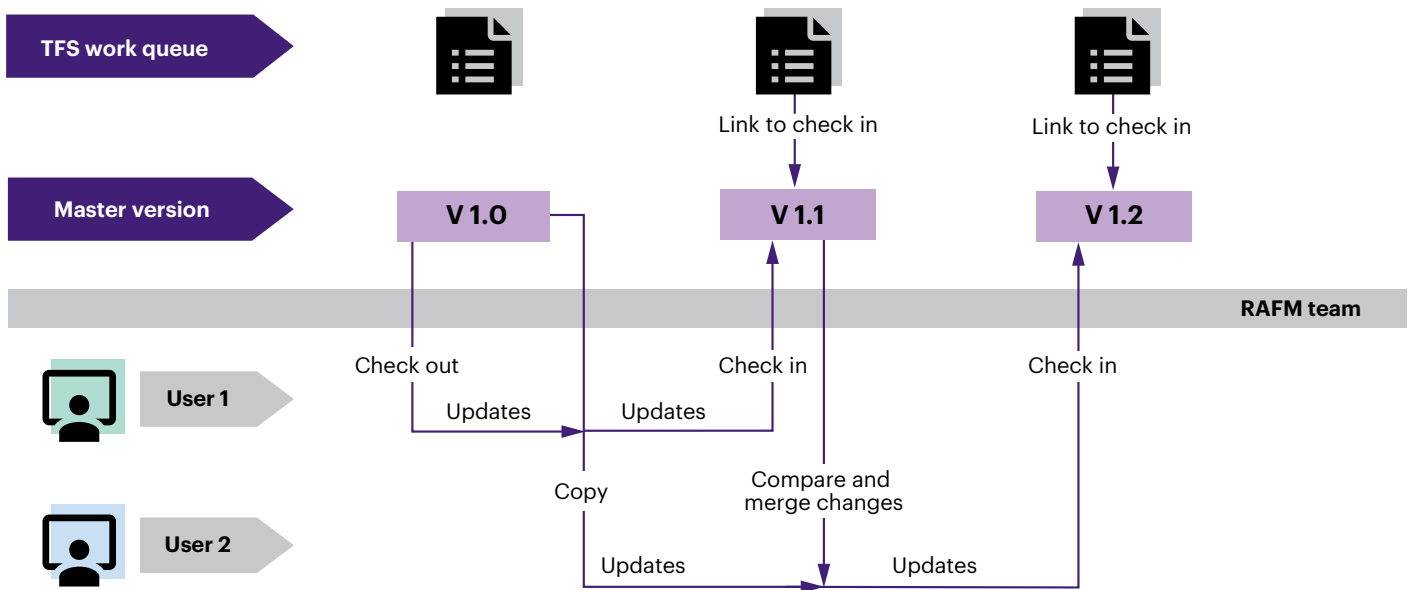### vTest automated testing service

To deliver efficient, low-risk model development requires good testing practices; ensuring both the ongoing correctness of the models and that the IT cost doesn't increase as changes are made.

vTest provides an automated testing service for RiskAgility FM developers, validating changes to the model against test packs and providing alerts on unexpected deviations, as well as management information on the trends in tests.

This reduces the cost by catching problems earlier and develops skills and best practices in the modelers.

Figure 3: **RAFM Team delivers low cost collaborative development between modelers**

TFS work queue			
		Link to check in	Link to check in
Master version	V 1.0	V 1.1	V 1.2

RAFM team

User 1

Check out   Check in   Check in

Updates   Updates

User 2

Copy   Compare and merge changes

Updates   Updates

Provides efficient, scalable distributed processing

High-performance grid computing in combination with efficient compilation enables you to avoid compromises between accuracy and speed.

In a cost-conscious world, with ever increasing demand for faster close and more complex and accurate calculations, everyone's concern is to find fast, efficient, and scalable means to perform the calculations. It's no longer a case of doing the best you can with the resources you have, but instead, delivering more, in less time, at a lower cost.

With RiskAgility FM, you can run models in your company data center using Microsoft Windows HPC, in the cloud with Microsoft Windows Azure or with WTW vGrid — our Software as a Service scalable virtual grid solution designed specifically for use with RiskAgility FM.

This gives you flexible, scalable options for distributed processing so you can get precise calculation results when you need them — and opens up the world of nested stochastic capital projections.

Even the smallest companies are looking for more, moving from the risk-fraught desktop scavenging to small compute grids or SaaS alternatives.

RiskAgility Financial Modeler supports a number of options, delivering cheaper, faster and better risk analysis.

Microsoft HPC

The industry standard solution to managing a large compute environment, or hybrid of multiple environments is Microsoft HPC. RiskAgility FM takes advantage of this, ensuring calculations can be smoothly and efficiently distributed across large compute grids, with some clients running many thousands of cores regularly. The topology allows IT-compliant configurations where the nodes aren't laden with resource-hungry security and scanning software. The proven grid-management technology ensures the environment is robust, and hardware can be shared between jobs, and with other applications.

Further, it allows use of more complex configurations, integrating multiple data centers, DR sites, cloud environments, and even desktop scavenging. Our clients can get the most out of their hybrid environment configurations.

Using HPC grids allows sharing of the precious resources between applications when needed, without prejudicing business critical activities. Further HPC is more efficient and reliable than using peer-to-peer distributed desktop computers.

Microsoft HPC Azure

To ensure cost-effective use of cloud environments, RiskAgility FM adapts its integration with HPC to allow cloud-computing to be used in the elastic manner it was intended. Cloud environments deliver the best savings when turned on and off as required. Data is intelligently packaged and transferred to start the calculations and return the nodes for shut-down as quickly as possible. Further the licensing model is based on cloud-based license servers, allowing users to increase their consumption and reduce the run-times for the same costs.

vGrid Compute as a Service

Automating and managing large compute environments can be a headache for any IT department, with often inconvenient outages as the multiple tenants need to coordinate time for upgrades. The new dynamics of cloud computing, combined with the technical innovation of RiskAgility FM, allows WTW to provide a highly available "compute as a service" offering. With minimal local IT management needed, and costs attractive to both the smallest and largest clients, those using every day or bursting in exceptional circumstances, and those looking only for Disaster Recovery options, vGrid is a tempting alternative.
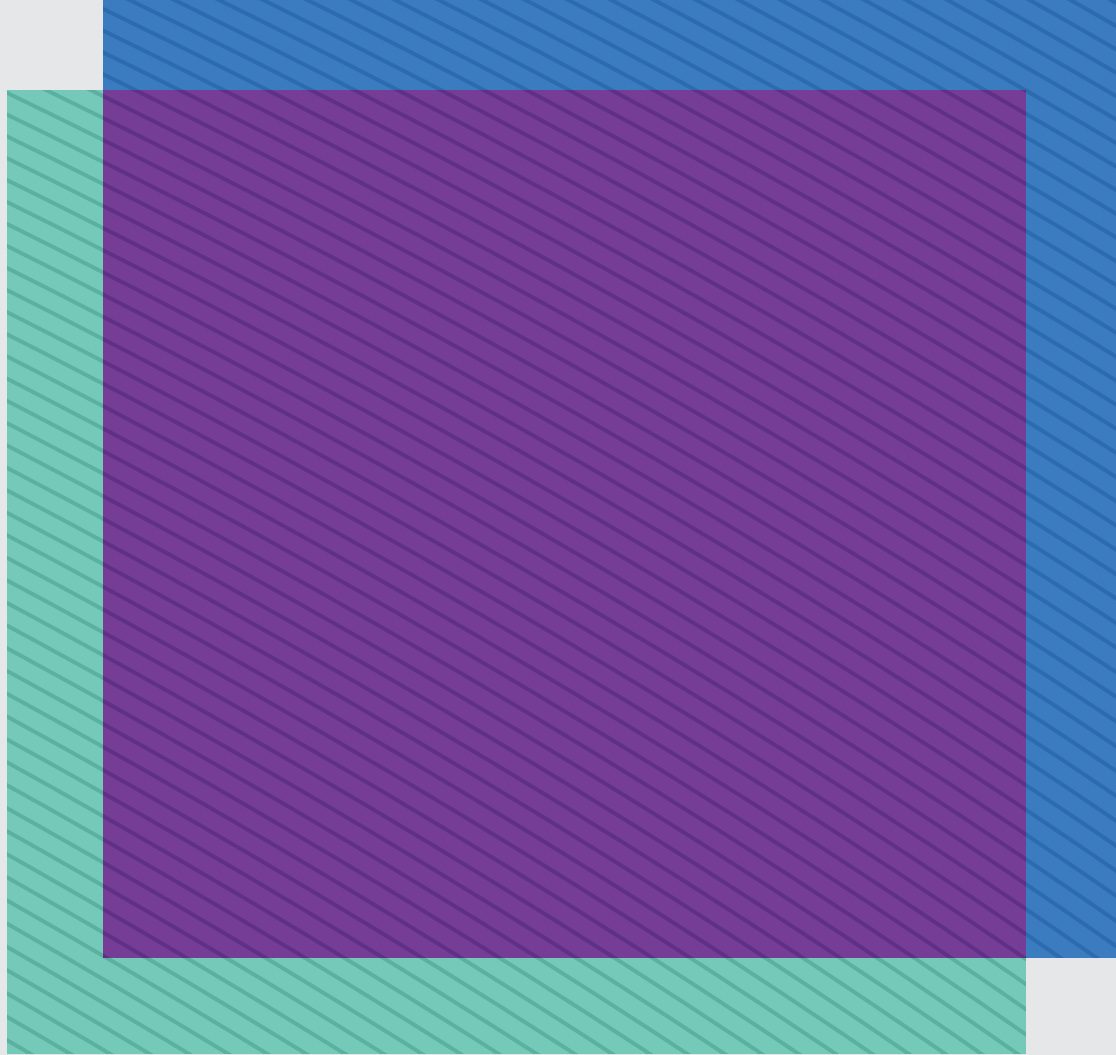
RiskAgility vGrid

Whether you're looking to achieve the most from your current hardware, scale into public cloud to cope with the peaks and troughs of modern regulatory reporting, or even break away from the constraints of your IT provider, RiskAgility FM offers attractive alternatives.

RiskAgility Financial Modeler and Solutions for Life

Risk Agility FM is part of our Solutions for Life portfolio of integrated software, technology and consulting services — a holistic solution to managing the end-to-end risk modeling process.

For more information on Solutions for Life, visit: https://www.wtwco.com/en-gb/solutions/services/solutions-for-life

About WTW
At WTW (NASDAQ: WTW), we provide data-driven, insight-led solutions in the areas of people, risk and capital. Leveraging the global view and local expertise of our colleagues serving 140 countries and markets, we help you sharpen your strategy, enhance organizational resilience, motivate your workforce and maximize performance. Working shoulder to shoulder with you, we uncover opportunities for sustainable success — and provide perspective that moves you. Learn more at wtwco.com.

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