



Milliman Solvency II Services

Solvency II is the most significant regulatory change to affect the insurance industry in many years. It will fundamentally transform the industry's valuation, capital adequacy and risk management regimes, with associated implications for your company's actuarial systems. Whether planning to implement standard or internal models, preparing for implementation of Solvency II and delivering it in practice are key challenges for insurance companies.

Working in conjunction with Milliman consultants from offices across Europe as well as in principal cities worldwide, we combine global experience with local knowledge, helping multinationals as well as local insurance companies shape their future in the current economic environment.

Whether you are looking for help with regulatory issues related to Solvency II, financial reporting, corporate restructuring, product development, risk management or strategic issues, Milliman will work closely with you to design pragmatic solutions based upon the latest techniques and innovations.

SOLVENCY II

Our solutions are tailored to the client's situation and cover all three pillars of Solvency II:

LEVEL	ACTIVITIES
Pillar I: Quantitative Aspects	<ul style="list-style-type: none"> Market-consistent valuation of insurance liabilities Solvency Capital Requirements (SCR) standard model implementation Calibration of Undertaking Specific Parameters (USPs) Development of partial or full internal models Capital allocation and aggregation
Pillar II: Governance	<ul style="list-style-type: none"> Own Risk and Solvency Assessment (ORSA) model development Design and implementation of risk governance system (risk policy) Support on model governance-related issues Validation of partial or full internal models
Pillar III: Disclosure	<ul style="list-style-type: none"> Support on implementation of Quantitative Reporting Templates (QRTs) Development of Analysis of Change (Variance Analysis) Actuarial support on implementation of Solvency Financial Condition Report (SFCR) and Regular Supervisory Report (RSR)

RISK MANAGEMENT CYCLE

Our services are best described when considering the risk management cycle. The risk management cycle is a continuous process of risk identification, measurement and review. We can distinguish the following steps:

- Risk identification
- Risk policy
- Risk measurement
- Risk management
- Review

FIGURE 1: RISK MANAGEMENT CYCLE



Several companies have adopted enterprise risk management (ERM) practices, but far fewer have been able to embed those practices into their organisations to create a structured and sustainable business management process. The introduction of Solvency II will give the insurance industry a strong incentive for further implementation of ERM.

Milliman can assist in implementing Solvency II by further filling the gap and answering the growing demands of policyholders, regulators, rating agencies, lenders, institutional investors and shareholders with a robust and repeatable ERM process tailored to your business.

Our approach is to use a phased process depending on your organisation's needs, maturity level of existing ERM processes and priorities. Change can be as gradual or as swift as your organisation desires.

The services Milliman provides related to the risk management cycle are described below.

RISK IDENTIFICATION

A risk assessment is used to identify risks. Through the identification process it can be determined which risks should be distinguished and included in the risk management framework. Categorising risks on expected frequency (what is the likelihood of the risk occurring) and the impact (what is the size of the risk) can help to determine the materiality of each risk.

Milliman can support clients in this process and help to identify risks which can be included in a quantitative capital model.

RISK POLICY

Not only will all insurance companies be faced with different capital requirements than they were used to under Solvency I, but they will also be faced with the dynamics of how these capital requirements will change from one reporting period to the other. At all times, insurance companies will need to have sufficient capital to cover the Solvency Capital Requirement (SCR). This SCR is heavily influenced by fluctuations in the financial markets, as well as by changes in the insurance portfolio. This change in dynamics requires insurance companies to align their strategy with the new environment.

Given these dynamics, risk policies are a key element in the governance around risk management. Risk policies relate to the design and implementation of the risk governance system, including:

- Risk definitions, taxonomy, organisation and management cycle
- Definition of risk appetite
- Allocation of the risk capital to different risk areas (risk budgeting)
- Training staff to create understanding and enable them to fulfil their tasks

RISK MEASUREMENT

Risk measurement covers all quantitative and qualitative elements in measuring and managing risks. This relates to both periodical reporting requirements (such as the balance sheet and SCR under Solvency II) as well as ad hoc analysis in measuring risk of, for example, an Own Risk and Solvency Assessment (ORSA) report related to a specific event.

Services Milliman provides as part of the risk measurement include:

- Develop and build valuation models for the economic balance sheet
- Develop models for the quantification of the different risks (underwriting, financial, operational, strategic) both for standard and (partial) internal models
- Models for the projection of future economic balance sheets and required capital for asset-liability management (ALM) and ORSA
- Implement quarterly and annual reports related to elements such as the economic balance sheet and the SCR
- Execute sensitivity tests and judgment on the model results in relation to the available capital and the SCR
- Develop and implement an ORSA process including internal and external reporting requirements

Valuation of insurance liabilities

Valuation of insurance liabilities on a market-consistent basis is only one of the many challenges posed by Solvency II, MCEV and IFRS 4 Phase II. In this increasingly complex environment, Milliman consultants follow every development closely, analyse the changes and determine the impact for the industry. This information enables us to help insurance companies define their pricing strategies, investment policy and primary valuation basis. Our consultants have extensive experience in using the most commonly used software tools for the valuation of all types of insurance liabilities.

SCR standard or (partial) internal model implementation

We assist insurance companies in developing and implementing new capital models to comply with Solvency II requirements. Our consultants work with insurers to build solvency capital models to comply with the Solvency II requirements either from scratch or by modifying existing systems. These models can consist of purely applying the standard formula or building a full internal model.

A typical step in the development of capital models will be the gradual development from purely applying the standard formula towards a partial or full internal model. Alternative modelling approaches for specific risks could initially be done for the ORSA and/or the risk appetite without directly using such methods as a (partial) internal model. However, these alternative modelling approaches typically form an ideal starting point in the development towards a (partial) internal model.

In the development of capital models, Milliman can help by using either the client's software of choice or our own proprietary software tools such as MG-ALFA[®], MG-Hedge[®], ReservePro[®] and Reserve Variability Model[™] (RVM).

We use a structured approach for the development and implementation of models. As part of model development, we can provide comprehensive training for clients' actuarial staff so that they can fully utilise the new systems.

All steps of the development of the models will be documented adequately and will meet the documentation requirements of Solvency II. The documentation will comprise elements including methodology papers, model requirement documentation, model design, process flows, data definitions, test documentation and user manuals.

Asset-liability management

We advise our clients on how to use risk models in their strategic decision making. We help clients to analyse and select strategies—given a predefined risk budget—taking into account the companies' short-term risks in combination with the long-term goals.

Our approach includes an assessment of all exposure to risks and analysis of the impact of these risks on possible (economic) scenarios, strategic decisions, future expected returns, balance sheets and capital requirements. In these analyses, compliance with regulatory demands is considered as a necessary restraint. By introducing (dynamic) risk budgets for all risk categories, our clients are able to strategically optimise risk and return measures.

We advise clients on all of the major vehicles for reducing risk and improving return in an ALM context, including reinsurance, securitisation, asset allocation, structuring hedge portfolios and strategic acquisition or divestment.

Own Risk and Solvency Assessment

Milliman can help in the development of an ORSA model in order to assess and manage risks on a prospective basis in line with the undertaking's strategy and its risk appetite. An ORSA process can be viewed as an ongoing process following the steps of the risk management cycle.

RISK MANAGEMENT

As part of risk management, we cover managing and monitoring risks in light of the risk appetite and risk policies. This includes:

- Management actions to control risks, i.e., investment, reinsurance, underwriting and profit-sharing policies
- Risk management reporting to monitor risks on closing date and over the forecast period. This includes the RSR, SFCR and ORSA report

Milliman can help with defining the required management actions, setting up a risk management reporting framework and providing support in implementing a risk dashboard.

Risk reporting

Milliman assists insurance companies in the broad range of activities around annual or quarterly reporting. Besides assisting insurance companies in the reporting process and defining the required reports, we also have the expertise and infrastructure available for companies that wish to outsource their actuarial activities.

Investment consulting

Milliman is one of the global leading independent investment consulting firms, backed by our consultants' proven expertise and Milliman's highly regarded proprietary analytical and modelling tools. Our full menu of services within the investment cycle helps organisations to develop a strategic or tactical investment policy

including the use of advanced asset liability models, investment managers selection and performance result evaluation. Milliman delivers unbiased guidance for investment programs to help meet your or your clients' goals.

Risk management execution and monitoring

Milliman provides tailored financial risk management services to institutional clients worldwide. Our financial risk management services help clients control key financial risks, including interest rate, inflation, credit and equity market risks. Milliman offers a wide range of services, from delegation of liability hedging and overlay implementation to complete solvency management solutions.

Milliman is a market leader in risk management for insurance companies. We combine our knowledge of the insurance industry with our extensive experience in executing and managing derivatives. Our main aim is to help our clients control financial risks so that they can achieve their financial objectives.

Our implementation service includes design, execution, negotiation of ISDA documentation and credit support annexes, collateral management and administration. In addition, Milliman's experience and scale in counterparty selection, derivatives execution, operations support, performance attribution and managing counterparty risk ensures a cost-efficient implementation of strategies.

FIGURE 2: INVESTMENT CYCLE



MODEL IMPLEMENTATION

We use a structured approach for the development and implementation of models in which we distinguish the following five phases:

Analysis: In this phase, the requirements of Solvency II, the insurance products, risks and other relevant information are analysed and described in model requirements.

Design: Based on the model requirements, it will be possible to design the models both from a technical and functional point of view.

Build: This is the phase in which the models will actually be developed. Based on the requirements and the design, the calculation and reporting engines will be built. The models will be built using a prototyping phase followed by final construction. Commonly, the models for the technical provisions will be built per product group.

Testing: The testing will be done from a technical and functional point of view. The technical test will examine the robustness and quality of the systems and models. The functional tests will assess the correctness of the models. The models will be tested using pre-defined test cases and test criteria.

Implementation: In the implementation and integration phase the models are embedded in the regular processes and handed over for production. The models, hardware and software need to be in place to function correctly in all different scenarios. The model users will be trained to use the model and will receive the user manuals.

Our risk management solutions are flexible and easy to incorporate into an existing investment process. This is achieved through a transparent and independent advisory and implementation process.

We are distinguished by our adherence to Milliman's principles of independence, and as a consequence do not trade a proprietary book. More broadly, we strive to tightly align our incentives with our clients' objectives.

REVIEW

The final step in the risk management process is the (continuous) review of the whole risk management framework. The following elements are part of this step:

- Performing back testing with respect to profit and loss attribution
- Performing the review by internal audit function on the performance of the risk governance and the risk processes
- Performing model validations for an internal model application under Solvency II

Model validation

As part of the application of a (partial) internal model, a model validation has to be performed. Milliman consultants can help with validating models to align with Solvency II requirements. We developed a validation policy which is consistent with the Solvency II requirements and apply the policy for several clients in an efficient and pragmatic way.

Independent review

We can offer both market-specific insights into industry regulations as well as global context on best practices. Our consultants frequently serve as statutorily required independent experts or at clients' requests.

Although the regulatory requirements on actuarial certification will change under Solvency II, it is expected that insurance companies will seek comfort through external reviews of their different models, quantitative analysis and the required reporting. Milliman is able to perform such reviews.

ABOUT MILLIMAN

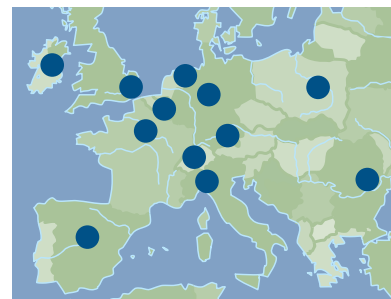
Milliman is among the world's largest providers of actuarial and related products and services. The firm has consulting practices in life insurance and financial services, property & casualty insurance, healthcare and employee benefits. Founded in 1947, Milliman is an independent firm with offices in major cities around the globe.

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MILLIMAN IN EUROPE

Milliman maintains a strong and growing presence in Europe with 250 professional consultants serving clients from offices in Amsterdam, Brussels, Bucharest, Dublin, Dusseldorf, London, Madrid, Milan, Munich, Paris, Warsaw and Zurich.

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