



Milliman Risk Advisory Services





Our Capabilities

For more than 60 years, Milliman has pioneered strategies, tools, and solutions worldwide. One of the largest risk consulting and actuarial firms in the United States, we are recognized leaders who have helped shape significant changes in the industries we serve.

We help clients make business sense of complex technical situations, with practical intelligence that yields practical results. Milliman consultants offer specialized services in employee benefits, healthcare, investment, life insurance and financial services, property and casualty insurance, and risk advisory services. Within these practices, we serve a wide range of current and emerging markets. Clients rely on us as industry experts, trusted advisors, and creative problem-solvers.

As the marketplace grows and businesses cross borders, a global perspective is more important than ever. With offices in principal cities worldwide, Milliman combines international experience with local expertise. We can help you be prepared to operate in new markets, expand beyond your boundaries, and understand how your business is affected by developments around the world.

What sets Milliman apart? It starts with our independent ownership. This gives us an uncommon level of professional freedom to focus on your needs and the best, most innovative ways to meet them. Our rigorous internal peer review process allows us to put that innovation to use in creating high-quality research and products that can give our clients a competitive edge.

Independence means impartiality. Clients know they can depend on us for unbiased assessments and recommendations. Independence empowers our consultants to think unconventionally, often leading to groundbreaking solutions. And it keeps us agile, poised to help you uncover new opportunities and confront emerging risks. The Milliman culture allows for true market-driven growth, with consultants free to pursue focus areas that are important to our clients.

Risk Advisory Services

Milliman is a pioneer in risk measurement and advises global organizations on identifying risks, evaluating risks, analyzing risk relationships, managing risks, and hedging risks.

We are specialists in designing integrated governance, risk, and compliance (GRC) business processes that can improve performance management, capital efficiency, stakeholder management, and operational excellence. We have developed a series of best practices for enterprise risk management (ERM) and operational risk management business processes. In addition, we have built a unique online work platform that facilitates the management of enterprise-wide risks and fulfills regulatory and rating agency requirements for maximum evaluation scores.

We can design new GRC, ERM, and OpRisk processes that add real business value, or we can assist you in raising the maturity level of your current process. Our unique Milliman GRC framework can integrate business process for ERM, compliance, supply chain risk, counterparty credit risk, sustainability, crisis management, and internal audit. Our professionals deliver proven solutions for sound GRC strategies and a broad range of service and tools to address evolving workforce needs.



CLIENTS & INDUSTRIES

- Insurance companies
- Financial institutions
- Energy / Utilities
- Healthcare
- Public sector

PROFESSIONAL SERVICES

- ERM consulting
- Risk frameworks
- Complex risk assessment
- Economic capital modeling
- Risk technology

PRODUCTS AND TOOLS

- CRisALIS™
- GRC online work platform
- MG-ALFA® (asset liability financial management)
- MG-Hedge®
- DFA Capital: ADVISE® and GEMS®

Milliman GRC

Governance, risk, and compliance (GRC) tools can enable the establishment of a more mature ERM process. Milliman’s GRC is a unique online work platform based on a private, secure cloud computing infrastructure. It has been specifically developed to help facilitate the ERM business process. This multi-language, multi-currency solution enables firms of all sizes to rapidly organize their risk infrastructure into a robust framework.

The Milliman GRC online work platform provides a controlled environment for the information and processes needed for compliance with regulations including Solvency II for Insurance companies. Another advantage of the platform is that it can assist in showing rating agencies such as S&P a robust risk management framework for improved credit ratings.

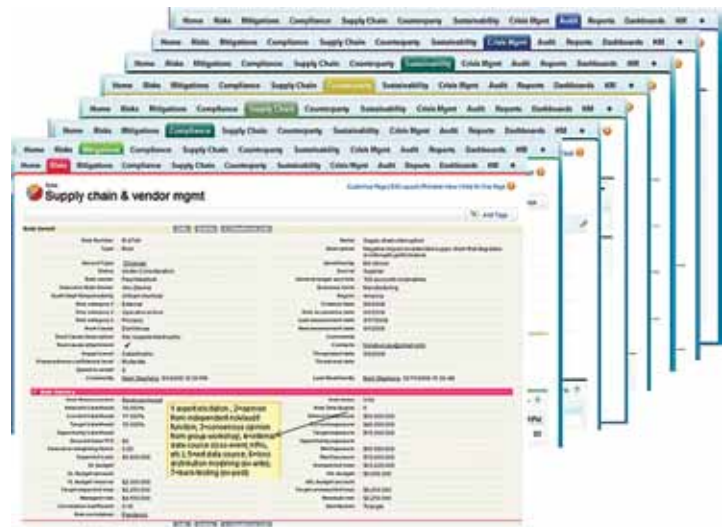
The platform not only enables firms to track controls and monitor key risk indicators (KRIs) but also provides valuable knowledge for senior management and key stakeholders about risk adjusted and integrated business performance. It has been developed to assist companies in self-diagnosing and improving operations. Milliman GRC uses dashboards to assess and illustrate risk indicators in real time, thus helping your organization to communicate risks effectively and also make more informed business decisions.

MILLIMAN GRC:

- Is a flexible, customizable, and scalable solution
- Creates a repeatable, sustainable, and embedded risk process
- Manages business processes with greater efficiency
- Increases accuracy and reduces errors
- Automates the management of the compliance process
- Is an interactive tool: Your “virtual conference room” for ERM
- Interfaces with Excel spreadsheets as well as with the major actuarial and financial modeling systems
- Contains additional features such as data warehousing and document management
- Has “role-based” security features, is auditable, multi-lingual and multi-currency

MILLIMAN GRC CAN ASSIST ORGANIZATIONS TO:

- Understand their individual risk profile
- Enable risk owners and control owners to manage their portfolio
- Organize their risk infrastructure in a user-defined framework
- Build the optimal risk framework reflecting the unique risk profile, culture and needs of their business
- Enable your firm to upgrade your risk management expertise and receive credit rating upgrades
- Generate automatic reports, demonstrating compliance with regulatory requirements
- Improve their understanding of risk indicators and the risk adjusted performance of business units



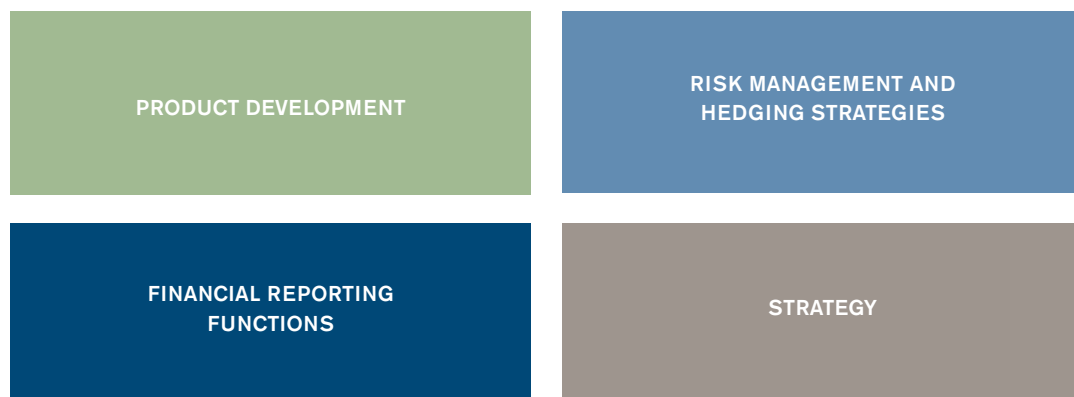
Market Risk Management

Milliman's Financial Risk Management (FRM) specialists are global market leaders in the fields of product development, risk management, and outsourced hedging support services. Our consultants have expertise in capital markets, quantitative development, technology, and actuarial methods. We have more than 90 specialized consultants located in Chicago, London, and Sydney who operate as an integrated team to provide consulting and outsource services to our clients that lead the market and define global best practices.

We have worked with leading global financial institutions on:

- Risk management, including the design and implementation of capital markets hedging strategies
- Product development and pricing, including design and management of investment funds
- Financial reporting
- M&A transactions
- Capital allocation and management
- Linking market risk drivers—including interest rates, inflation, commodity prices, equity prices, and foreign exchange rates—to operational and strategic risks

Development and implementation of risk management strategies for the largest companies in the life insurance industry



Our practice is a leading provider of hedging services to financial institutions. More than 50 major financial institutions around the world trust us to manage risk in their portfolios. We currently value and hedge more than 6 million investor accounts every day, relating to guarantees on assets worth in excess of US\$500 billion. Our experienced professionals offer diverse expertise and are able to deliver industry best practices to our clients while controlling operational risk, thus enabling efficient dynamic replication strategies at the minimum cost. These services have played a central role in helping our clients develop and launch products very quickly, without having to develop hedge manufacturing capabilities in house.

Credit Risk Management

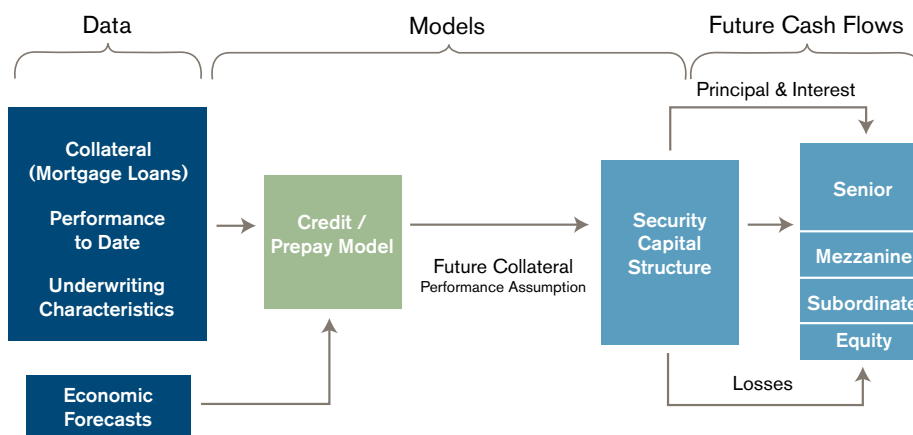
Milliman offers credit risk management solutions and is a global industry leader in mortgage collateral risk analysis. We have conducted extensive analysis and stochastic credit risk model building and model validation, and we have worked with a diverse global clients base in the following groups:

- Insurers, including mortgage and financial guarantee insurers
- Banks and other financial institutions
- Investors, including private equity funds
- Governmental entities
- Rating agencies

Milliman focuses on transparency, credit and collateral, underwriting quality of collateral, and economic factors and long-term perspective to properly consider tail risks. Typical engagements include:

- Loan-level portfolio credit risk analysis
- Pricing or loss reserving
- Risk management framework review, including (re)insurance, arrears management, hedging programs, etc.
- Capital modeling including stochastic model building
- MBS/ABS/CDO analysis

Valuation Model Schematic



BENEFITS OF THE MILLIMAN VALUATION MODEL

What makes Milliman's mortgage portfolio valuation services important?

- Calculate impact on surplus and capital
- Facilitate loss mitigation
- Provide strategic risk management tools
- Improve decision making

CRisALIS – Complexity-based Risk Analysis

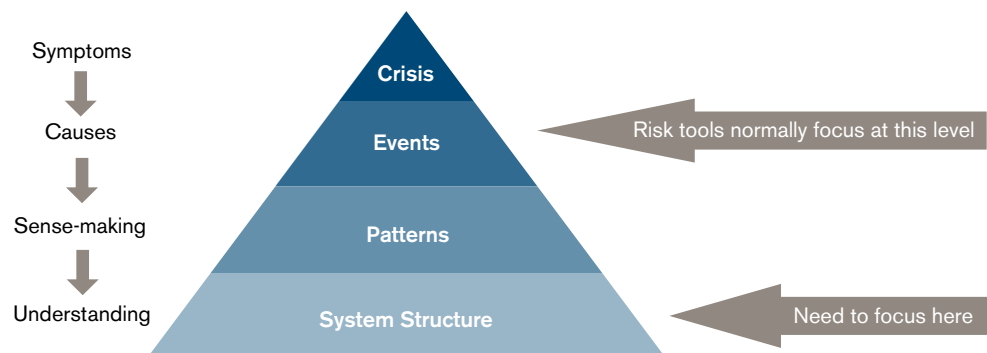
Milliman's CRisALIS™ delivers practical, insightful, and robust methods for identifying, assessing, and managing risks and their relationships to one another.

Enterprise risks cannot be understood by simply aggregating a view of risk components—you need to study the whole. CRisALIS tools provide a scalable and practical approach to capturing the risk profile in terms of interacting parts, and analyzing it to identify the key risk areas and dynamics.

CRisALIS provides a real understanding of your risk profile and helps you translate it into tangible, actionable information for capturing opportunities or mitigating threats to your business strategy.

CRisALIS tools bring tangible scientific help in identifying unknown, emerging risks and making sense of how they affect performance. Using DACORD™ (developed in conjunction with DRTS Ltd.), we are able to help you identify areas of company performance that simply don't make sense.

Our Risk DNA Analysis™ helps you to make sense of the information contained in real risk events around your business. A simple multi-characteristic analysis yields significant insight into how risk is evolving in your business and how it might evolve further in the future. These insights help to secure the right resources and prioritize them in a resilient way to ensure that you are efficiently risk managing your business.

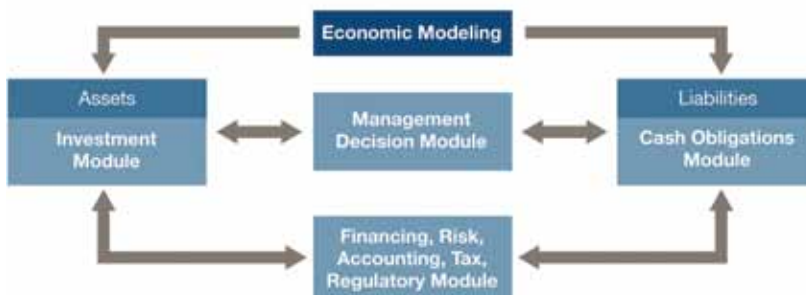


Economic Capital Modeling

A critical aspect of successfully managing risk is to understand the economic capital requirements necessary to sustain and grow your business. For the financial and insurance industries, economic capital modeling is sometimes mandated by regulation; for other industries it can still be a beneficial tool.

Rapid stress testing and scenario modeling are components of economic capital modeling and are beneficial ways to view risks with probability distributions utilizing multiple parameters. Recognizing the increased need clients have for ready access to powerful economic capital models, Milliman has developed and successfully uses market leading economic modeling solutions to view risk-adjusted, forward-looking financial statements by turning quantitative data into financial models. These solutions provide a greater level of insight into the business and financial risks facing global organizations. In addition, our Economic Scenario Generator with Milliman's hands-on expertise and extensive consulting experience create comprehensive and unique economic capital modeling solutions.

Enterprise-wide Economic Capital Overview



Our risk advisory solutions work in tandem with the economic capital modeling tools by collecting the data in risk assessments that can be input and run in the economic model simulator. Faster deployment and the ability to leverage economic capital models more quickly enable you to better meet regulatory and ratings agency requirements and immediately gain insight into the risks or opportunities you may have been missing. Additional advantages include:

Scalability. Milliman's solutions enable clients to model the interactions of the broadest spectrum of risks, and are scalable to handle the large and heterogeneous data sets that economic capital modeling demands without losing granular detail.

Flexibility. Milliman recognizes that every company's economic capital modeling needs are different. That's why our solution is modular, and can be easily expanded with disparate business challenges over time. Select only those capabilities you need now and add others later.

Aptitude. By applying its actuarial judgment, experience, and expertise, Milliman helps clients place proper parameters on their analyses to obtain more predictive results—and more quickly realize the benefits of using the economic modeling software solutions.

Usability. Multiple users can access the economic modeling solutions simultaneously. Reports and dashboards can be tailored to different users and reports can be generated to meet a variety of needs—from financial analysis to regulatory reporting to board-level decision making. Standard reports built into the software solutions include GAAP and statutory financial statements.

Work With the Best

Put Milliman's independent thinking, depth of knowledge, and breadth of experience to work for your organization. Together we can address the complex issues of today's marketplace.

We'll help you ask the right questions and answer them with the best technical resources, exceptional business skills, and actionable creative ideas. Our consultants will listen closely to your needs and develop solutions tailored to your situation and your markets. Find out how Milliman insight can help you thrive in these challenging times and create a successful future.

To learn more, contact your local Milliman office or visit our Web site at www.milliman.com.

Client Case Study:

COMPREHENSIVE RISK ANALYSIS LEADS TO A RATING UPGRADE

A major insurer needed a reliable method for calculating operational and strategic risks in order to demonstrate to ratings agencies it had adequate capital under all plausible foreseeable conditions. Milliman used CRisALIS to assess the overall enterprise-level risk exposure, identifying the key risk factors.

Our risk calculations allowed the insurer to present a more complete picture of its risk scenario to rating agencies. The methodology yielded a repeatable process for future years that would incorporate new business and created an audit trail for the data. The company's in-depth research and thorough documentation convinced the agency to award the insurer a rating upgrade.

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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. For further information, visit milliman.com.

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