



IMPACT BRIEF

# Modernizing model risk management with Domino

## Model risk management mitigates risk

While the potential for AI-driven decision-making in financial institutions is massive, the risks and downside could also be devastating. The risks of non-compliance and poor decision-making have only increased, as AI innovations have outpaced outdated risk and governance management systems because models and data are constantly evolving, and new regulations continue to emerge.

Regulators have begun to focus on the specific challenges posed by AI/ML, reflecting the growing importance of models in financial decision-making. For example, the Federal Reserve (SR 11-7), OCC (2011-12), SEC (Rule on AI/ML in Trading) and FDIC (Guidance on MRM) have issued guidance that forms the foundation of model risk management (MRM) practices across the country. Second, recent history demonstrates the consequences of inadequate MRM solutions.

- **2008-2009 global financial crisis:** Complex financial models failed to accurately assess the risks associated with mortgage-backed securities, contributing to the more than \$20 trillion (USD) market meltdown. Over-reliance on inadequately validated models had far-reaching economic consequences, and resulted in more stringent regulations.
- **The “London Whale” incident:** A large U.S. bank misused a risk-hedging tool aggressively, exceeding its Value-at-Risk (VaR) limits for nearly a week. Inadequate governance and validation of the risk model were adjusted, but their investment strategy remained unchanged. This resulted in losses running into billions of dollars, emphasizing the importance of proper model governance, validation — beyond simple parameter adjustments.

These incidents highlight the critical need for rigorous MRM practices. Model risk, measured in terms of financial loss and reputational harm, can never be eliminated — only mitigated and managed through robust MRM practices.

## Why is MRM challenging?

### **Legacy MRM solutions are outdated**

Traditional MRM practices are costly, cumbersome and take a toll on innovation, slowing progress for the sake of compliance. For example, they lack integrated, end-to-end AI model lifecycle governance, and post-development exercises characterized by manual artifact reconstructions and require excessive documentation, which wastes time.

### **Advanced AI technology is a “black box”**

While powerful new technologies like generative AI (GenAI) can operate as “black boxes,” enterprises lack the means to monitor and control them, e.g., using spreadsheets, drives, and disparate documents. This inflates risks of non-compliance by making it difficult to understand and explain decisions to regulators or customers.

### **Maintaining data quality**

As models become more advanced, they also become more data-hungry. Ensuring the quality and representativeness of input data is crucial to prevent biased or unfair outcomes and skewed model outputs such as risk assessments.

### **More models, more risk**

The volume of models in use is also increasing dramatically as is the use of composite AI (multiple models together in a single use case), and this interdependency and a small inaccuracy can significantly impact downstream decisions and risks.

### **Continuous monitoring is required**

The dynamic nature of financial markets necessitates continuous monitoring and rapid response to model performance issues. This is particularly crucial in applications like real-time pricing, where models must adapt quickly to changing conditions.

Modern financial institutions need a modern approach to MRM that keeps risk mitigation ahead of AI innovation, while ensuring regulatory compliance in an automated and efficient way.





## Modernizing MRM is critical

Model risk management is a critical discipline in all financial institutions, and offers a structured approach to assessing, mitigating, and monitoring risks associated with the development and use of models across an organization, typically used in financial operations and for decision-making, from credit scoring, loss forecasting, customer predictions, and risk assessment to asset valuation and regulatory reporting.

### The primary objectives of MRM are to:

- ✓ **Ensure model accuracy and reliability**
- ✓ **Maintain the integrity of model development and implementation**
- ✓ **Guarantee appropriate model use within designed parameters**
- ✓ **Facilitate ongoing validation and performance monitoring so they perform as intended**
- ✓ **Align model risk with the institution's overall risk appetite**

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“You can’t rely solely on well-respected models anymore. You need to understand why that model is applicable for your use, its relevance against other models, how it was built, and its pros and cons. Transparency in the modeling process is critically important.”

— Managing Director, Moody’s Analytics

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“Built-in reproducibility enables staff to understand and build on past knowledge. One of the most important features is the ability to document work, maintaining a project’s artifacts and history for both research and auditing purposes.”

— Chief Data Scientist, Allstate

## Operationalize MRM with Domino



Domino's Enterprise AI Platform provides a comprehensive ecosystem for end-to-end model development. The Domino Governance solution is embedded where AI builders work, seamlessly creating the traceability and transparency required for robust model risk management.

By building MRM compliance capabilities on top of a unified, trusted AI and MLOps platform, Domino ensures that models are inherently auditable and governable throughout their lifecycle, enabling financial institutions to balance innovation with regulatory compliance, effectively. This allows organizations to drive more value from monetized and productionized models, insights and data and innovate faster with confidence.

### 5 requirements for operationalizing MRM

#### FOR RISK MANAGERS, REVIEWERS, AND AUDITORS

**Model inventory and lifecycle management:** Domino provides a centralized repository and global system of record for comprehensive model cataloging, offering clear visibility into model lineage and dependencies. This is fundamental to effective MRM, allowing institutions to track and manage their entire model portfolio efficiently.

**Automated evidence generation and documentation:** Domino records AI lineage, model versions, changing data and code, and other dependencies for guaranteed reproducibility and audit documentation. This significantly reduces the time and costs associated with preparing for regulatory examinations and internal audits.

**Centralized policy management and approvals:** Domino centralizes MRM policies and evidence of policy adoption, providing a single source of truth and 360° view of policies, artifacts, and the context of work. This facilitates easy access for auditors and regulators, reduces the risk of inconsistencies, and saves time by accelerating policy reviews, approvals, and updates.

#### FOR DATA SCIENCE, RESEARCH, AND ANALYTICS LEADERS

**Policy adherence and risk minimization:** Domino accelerates policy adherence using templates and checklists, and enforces policies using automated scripts, to maintain consistent risk management practices across all models. Domino's structured approach minimizes the risk of policy violations, helping financial institutions maintain compliance and reduce potential regulatory issues.

**Integrated model monitoring:** Domino provides a "single pane of glass" for observing traffic, drift, and health trends for all production models with out-of-the-box and custom metrics. The right people are notified and asked to act at the right time when drift, divergence, and data quality checks exceed thresholds. When retraining is needed, it is easy to drill down into model features and modify, retrain, and redeploy models quickly instead of starting over again.

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"Domino encourages  
us to experiment  
more, and we can go  
from idea to testing  
much more quickly  
and securely."

— Data Science Manager, Allstate



How Domino Governance maps to regulatory frameworks

United States MRM guidance, regulations, laws, and executive orders	Policy templates	Project templates	Goals	Model development	Model monitoring	Security	Alerts	Flows	Policy enforcement	AI gateway	Secure access	Governance dashboard	Versioning and lineage	Model registry	Model cards	System of record	Audit log
Supervisory Guidance on Model Risk Management (SR 11-7 & OCC 2011-12)	•	•		•	•		•	•	•		•	•	•	•	•	•	•
Federal Reserve Guidance on Supervisory Assessment of Capital Planning and Positions for Firms Subject to Category 1 Standards (SR 15-18)	•	•	•	•	•	•	•	•		•	•	•	•	•	•	•	•
Interagency Statement on Model Risk Management for Bank Systems Supporting Bank Secrecy Act/Anti-Money Laundering Compliance (SR 21-8)	•	•		•	•	•	•	•	•	•	•	•	•	•	•	•	•
Blueprint for an AI Bill of Rights	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•
Consumer Financial Protection Bureau (CFPB) Circular on Adverse Action Notices in Credit Decisions	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•
Fair Credit Reporting Act (15 U.S.C § 1681)	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•
NIST AI Risk Management Framework (AI RMF 1.0)	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•
Executive Order on the Safe, Secure, and Trustworthy Development and Use of Artificial Intelligence	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•
International MRM guidance, regulations, and laws																	
China's Next Generation Artificial Intelligence Development Plan	•		•	•		•	•		•		•	•	•	•	•	•	•
G20 AI Principles	•				•	•					•				•		•
Canada's Directive on Automated Decision-Making	•	•	•	•	•		•	•	•	•	•	•	•	•	•	•	•
Bank of England and FCA AI Public-Private Forum (AIPPF) Final Report	•	•	•	•	•		•	•	•	•	•	•	•	•	•		•
UK's Information Commissioner's Office (ICO) Guidance on AI and Data Protection	•	•	•	•	•		•	•	•	•		•	•	•	•		•
EU AI Act	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•
Hong Kong Monetary Authority (HKMA) AI Governance Principles	•		•	•	•		•	•	•	•	•					•	•

About Domino Data Lab

Domino Data Lab empowers the largest AI-driven enterprises to build and operate AI at scale. Domino's Enterprise AI Platform provides an integrated experience encompassing model development, MLOps, collaboration, and governance. With Domino, global enterprises can develop better medicines, grow more productive crops, develop more competitive products, and more. Founded in 2013, Domino is backed by Sequoia Capital, Coatue Management, NVIDIA, Snowflake, and other leading investors.

Learn more at [www.domino.ai](https://www.domino.ai) →

Conclusion

As the reliance on complex models in finance continues to grow, so does the importance of modernizing model risk management. Domino streamlines regulatory reporting by reducing the time and effort required to collect compliance artifacts and documentation, while improving the accuracy and consistency of regulatory submissions. By modernizing MRM with Domino, financial institutions can navigate the complexities of MRM with confidence, ensuring they can de-risk AI at scale, to deliver more AI value at scale.

Explore how Domino can enhance your MRM practices →

